NORTEL
NORTHERN TELECOM

Norstar
Computer Telephony Adapter
Portfolio of Products

Channel Introduction Package

Issue 1.0

norstar

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Sales and Marketing Bulletin

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Nortel CALA is pleased to announce the availability of the Norstar Desktop CTI technology - Computer Telephony Adapter 100. Norstar Desktop CTI (Computer Telephony Integration) combines Nortel's Norstar portfolio with the power of desktop computing via the Computer Telephony Adapter family of TAPI enablers outlined in this bulletin.

The convergence of personal computers (PC) and telephones has produced a new standard that allows Windows Telephony applications such as Personal Information Managers and PC Dialers to communicate with telephone switches. Turnkey enabler and applications software packages will be available directly from Nortel and now run on DR-5 or later Norstar systems.

This document details the Computer Telephony Adapter. The material that will be covered includes:

- Product Positioning
- Computer Telephony Adapter Product descriptions
- Norstar system requirements
- Ordering information

Product Positioning

Wherever there is a person working at a desk with a telephone and a computer - there is an opportunity to implement a Desktop CTI application.

- **Size, Scope, Complexity of Norstar CTI**

There is a wide range of application opportunities across a number of different implementation scenarios. Norstar's Desktop CTI will address every situation, from small standalone Knowledge Workers, to globally focused, enhanced call center functionality.

- **Stand Alone Knowledge Workers**

Traditionally, CTI applications were only found in formal call centers; as CTI used to be an expensive and complicated undertaking that could only be cost justified in environments with high call volumes and pronounced strategic and financial importance. But with the fairly recent proliferation of PC and LAN technologies, continually reduced price tags for CTI enablers, and innovative new off-the-shelf applications, CTI is now applicable to almost anyone. The graphical user interface that Windows-based telephony brings to the individual's desktop simplifies the use

of the standard tools, (i.e. conferencing, directory dialing, etc.) as well as enhances access to other functions (i.e. FAXing, selective review of voicemail, etc.,).

- **Formal Call Centers**

A formal call center is where a company will dedicate several people to answer similar kinds of telephone calls. The individuals, or agents, within the formal call center specialize in answering incoming calls and concentrate on that activity. A formal call center is one in which the flow of incoming calls is managed to achieve successful customer interaction while maximizing a company's return on investment in equipment and personnel. The management of expense is almost as important as managing service. CTI can reduce cost via increased productivity, (i.e. less staff accomplishing the same work objectives).

The call center should be viewed as the strategic business unit that will help manage customer service objectives and commitments to meet customers' growing expectations, (i.e. shorter hold times, auto callback of abandoned calls). It will help increase sales and improve customer goodwill by making companies more accessible to their customers and prospects, (personalized service, expanded revenue opportunities via data base references to other products/services).

- **Informal Call Centers**

Informal call centers, which are fueling much of the small call center growth, also have several people answering similar kinds of calls. These individuals, however, may or may not be dedicated to answering incoming calls. They may be part time agents and perform other duties within the business. Prospects for informal call centers are more difficult to identify as the person answering the call may not be identified as an "agent" or a "telephone service representative". They could be the local expert in a particular department that takes calls from specific customers or during specific times of the day in addition to performing other duties. Typically, an informal call center involves using call center capabilities to provide an enhanced form of customer satisfaction or revenue achievement by making the best qualified persons available by phone.

Norstar CTI Desktop Enablers - TAPI

Norstar DeskTop CTI (Computer Telephony Integration) combines Nortel's Norstar portfolio with the power of desktop computing. A TAPI (Telephony Application Programming Interface) application runs on the users desktop computer (TAPI compatible Windows environments), drawing-on and issuing telephony commands from that position. Requirements to integrate with the Norstar are:

- **TAPI Service Provider (SP)**

The TAPI SP 1.1 is the software that provides the TAPI enabling functionality for the inter-operation of Windows based desktop computers and the Norstar. This item is included in the Computer Telephony Adapter 100 enabler kits.

- **Personal Call Manager**

The Personal Call Manager application is a screen-based telephony application that provides P.C. based control over standard telephony functions and allows you to build your own personal directories and profiles. It is intended to provide the user a personalized, basic call handling and control function. This application is included in the Computer Telephony Adapter 100 hardware device kits.

Please note, this application requires a Windows 95 operating environment.

Overview of Personal Call Manager

The following is a list of the various functions/capabilities of PCM:

1. Dial
2. Answer/Hold/Unhold
3. Conference/Split
4. Transfer (blind and announced)
5. Call forward
6. Do Not Disturb (DND)
7. Calling Line Identification
8. Call Duration
9. Last callers/calls log with call detail

- **Computer Telephony Adapter 100**

The Computer Telephony Adapter 100 is an external device that connects a DR-5 (or greater) Norstar system to a Windows 3.1 (or greater) PC that, in conjunction with a TAPI Service Provider, which is included in this package (see above), enables a TAPI compliant application environment. In addition, the Personal Call Manager screen-based telephony application is included in this bundle.

Advantages:

- simple installation - just plug in the cables, no need to open the PC
- ideal for self-installation by the end user
- ideal for sales demos using portable laptop computers
- low risk of software conflicts since the Computer Telephony Adapter 100 uses COM1 or COM2 software interrupts which are standard

Norstar System Requirements

- **Compatibility**

North American Key Systems Supported by Norstar TAPI & TSAPI

Norstar 3X8 DR-5
Compact 6X16 DR-5
Modular 8X24 DR-5
Modular ICS R1/T1
Modular ICS XC
Compact ICS

NOTE: *Platforms not appearing in this table are not currently supported

- **Norstar KSU Configuration**

There are no specific configuration requirements to support TAPI applications on a Norstar KSU.

Product Ordering

The three products described in this bulletin the CTA 100, the TAPI SP provider, and the Personal Call Manager application are all part of the CTI bundle that will be introduced in CALA. This bundle will be

available November 1, 1997. Please consult your November issue of the Norstar Price Book for questions regarding pricing. The code to order the bundle is the following:

Computer Telephony Adapter 100 (CTA100) **A0669951** **NT8B83FA93**

(Includes the physical connection between the telephone and the computer, the TAPI SP enabler, and the Personal Call Manager PCM application).

If you have any questions or comments, or require further information, please contact:

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1.0 Introduction

Norstar desktop CTI (Computer Telephony Integration) combines Northern Telecom's Norstar portfolio with the power of desktop computing. Turnkey enabler and applications software packages will be available directly from Northern Telecom and now run on DR-5 or later Norstar systems.

Nortel is committed to providing multimedia applications which integrate the computer and telephony technologies. Nortel equipment and associated application enablers also provide a rich platform for independent development of CTI applications.

In 1987, Nortel was the first manufacturer to support open Application Programming Interfaces (APIs) with DEC's Computer Integrated Telephony, and have since added IBM CallPath, Tandem CAM, HP ACT, and more. The Norstar ACCESS Tool kit, introduced in 1991, allowed Developers to design new and enhanced telephony solutions for Norstar customers. Currently there are over four hundred, (400) Developers participating in our Business Affiliates Program. We previously launched the first round of products that support Microsoft's TAPI (Teladapter and PCIB-TAPI Card) and Novell NetWare Telephony Services API (TSAPI) enablers. We are now entering the next phase of our support for the TAPI Enabled Desktop; the Computer Telephony Adapter family of TAPI Enablers.

1.1 The Computer Telephony Adapter Family of TAPI Enablers

Norstar Desktop CTI (Computer Telephony Integration) combines Northern Telecom's Norstar portfolio with the power of desktop computing via the Computer Telephony Adapter family of TAPI enablers outlined in this Channel Introduction Package. The Computer Telephony Adapter family of enablers replaces the current TAPI enablers, the Teladapter and the PCIB TAPI.

Please note, these current Teladapter & PCIB-TAPI products will be discontinued ("Mud's") once the new Computer Telephony Adapter 100 product is launched ("GA'd") in November, 1997.

A TAPI (Telephony Application Programming Interface) application runs on the users desktop computer (TAPI compatible Windows environments), drawing-on and issuing telephony commands from that position. Requirements to integrate with the Norstar are:

- TAPI Service Provider (this enabling software allows the desired application to inter-operate with the Norstar),
- Computer Telephony Adapter 100which provides a interface to link the desktop PC (W-3.1 or W-95) to the Norstar system
- In addition, the Computer Telephony Adapter 100 will include the Personal Call Manager, screen-based telephony application.

1.2 CHIP Outline

This CHIP outlines the delivery of the following Computer Telephony Adapter family of products:

- TAPI SP 1.1 software only
- Personal Call Manager software only
- Computer Telephony Adapter 100 bundled with the TAPI SP and Personal Call Manager software

Please note, the Personal Call Manager application requires a Windows 95 operating system and as such, is not supported by Windows 3.X systems. The TAPI SP supports both Windows 3.X and Windows 95.

Appendices give an overview of the VISIT Family of desktop applications (VISIT Voice and Fastcall) and introduce the Partner's Program of Third Party Applications.

Please note, the information covering the VISIT Applications and the Partners Program is intended to serve as an introduction only. For further information (i.e. compatibility, availability and pricing please contact the specific product prime identified in the "Contact List" section.

This Channel Introduction Package is designed to assist with information for the standardization of Norstar-desktop CTI. It provides an overview of the product portfolio and includes all information required to introduce the product.

This Channel Introduction Package answers the following questions about the Computer Telephony Adapter (100) TAPI Enabler:

- **Product Positioning** - How is the product positioned in the marketplace?
- **Description** - What is the product? What features does it have?
- **Documentation** - What documentation comes with Norstar-desktop CTI?
- **Ordering Information** - What are the appropriate ordering codes?
- **Training** - What type of technical training and sales training is available?
- **Service** - What are the warranty and repair procedures?
- **Contact List** - Who can I contact if I need further information?

2.0 Market Positioning

2.1 Market Need

2.1.1 Computer Telephony Integration

While not new, CTI has now come of age with affordable, feature-rich solutions for improving customer service through incoming telephone calls. CTI has been around for many years. The early systems required extensive design and integration activities and as such, were limited to large installations that could justify the expense. The dissemination of voice mail, followed by ACD and IVR were major milestones in the commercialization of CTI applications. Now, the next phase of CTI deployment, Desktop CTI, has begun. Gone are the days of expensive customized applications that were driven by proprietary links between the telephone system and the computer. The proprietary nature of the early applications served as a significant deterrent to a faster implementation of CTI. In 1995, a set of industry standards were established and those proprietary links gave way to open protocols, a critical milestone for wide-scale development of Desktop CTI.

2.1.2 Desktop CTI

Desktop CTI allows the basic functionality of a telephone to be embedded in a PC/Server, thereby enabling data to be tied to incoming phone calls. But a technology does not sell! People do not buy a technology, they buy a solution that makes them more profitable, more efficient and more competitive. The real opportunity lies in the fact that Desktop CTI applications are limited only by the creativity of the designer. This creativity is fueled by the scope and extent of knowledge and understanding of the particular user's environment and thus their needs. These open standards allow designers to tailor applications to specific scenarios. This is why Desktop CTI will experience explosive growth.

The infinite nature of the potential benefits that CTI brings to the value of a CTI-compatible telephone system dictates that Norstar comply with these newly defined open standards. The telephony platform must be flexible enough to permit expansion into new application environments. Thus, the CTI component of the Norstar platform will enable our customers to incorporate new features as they come available.

Our customers are demanding Norstar Desktop CTI for four primary reasons;

- To make them more profitable, more efficient and more competitive via CTI applications
- Add new value to Norstar systems with third party Windows telephony applications
- To respond to the market trend to support industry standards
- To reduce the existing complexity that is currently associated with the Norstar ACCESS program's approach to CTI

As technology enables telephone systems to evolve from voice-only services to encompass multi-media services, it is important to show Norstar as an active participant in this new market. There will be an increasingly wide variety of Desktop CTI applications available to take advantage of this integration. Norstar will lead the way with Personal Call Manager (see section 3.4.1.1)

2.1.3 Norstar's Desktop CTI Application - Personal Call Manager

Norstar Personal Call Manager (PCM) is a TAPI compliant, screen-based telephony application designed for use on the Windows 95 operating system. It is optimized for use with the Norstar TAPI Service Provider and raises Norstar feature utilization to new levels of simplicity and functionality. PCM brings much of the feature rich Norstar user interface to the Windows 95 desktop computer. With PCM, one can access an internal data base directory, double click on a name to; dial, conference or transfer calls. All with the ease of a mouse, thereby eliminating the guess work and perceived frustration of using advanced telephone features.

PCM brings you powerful personal call management by effectively uniting the communication ability and reliability of your telephone system with the data resources and point-and-click convenience of your desktop PC. PCM helps knowledge workers save time and reduce frustration. PCM will benefit anyone using the telephone to maintain contact with customers or business associates by speeding up call handling. Benefits can result in a substantial payoff in both productivity and improved customer service.

Norstar Personal Call Manager is enhanced by its capability as a diagnostic tool. PCM mitigates exposure to third party application issues. For example, if one is encountering a problem with their third party TAPI application, PCM allows the user to quickly determine if they are experiencing a Norstar problem, or a failure of the third party application. Hence, PCM also eases the customer support personnel's review of such customer service scenarios. PCM is a test tool, which quickly determines if problems lie in the third party application or with the Norstar TAPI SP.

With PCM's diagnostic capabilities and first party call control capabilities, PCM could be the only screen-based telephony application that most people would ever need!

2.1.4 Nortel's VISIT Applications

VISIT is a Nortel Multimedia computer application that drives network services, delivers unique end user value and stimulates demand for many Nortel products. VISIT is a product portfolio that combines the telephone, PC and telecommunications lines to provide on screen control of telephony functions, access to computer data bases and personal video conferencing.

An overview of the VISIT portfolio is attached as an appendix. For further information, please contact the VISIT Marketing Managers identified at the end of appendix A.

2.2 Market Drivers

End users are becoming increasingly aware of the benefits of integrating their computers with their telephone systems. They are beginning to recognize that soon they will not be able to live without Desktop CTI. Categorically, the value that Personal Call Manager and other Desktop CTI applications bring can be classified into one of five segments:

Employee Satisfaction
- Easier access to phone features
- Elimination of repetitive tasks
- Reduced errors in dialing

Reduced Expenses
- Reduced 800 line charges
- Reduced employee training
- Eliminate the need to customize software
- Applications easily modified to meet specific business requirements
- Increased productivity

Customer Satisfaction
- Faster call handling
- More accurate call handling
- Personalized answering
- Less time on the phone

Increase Revenue
- More orders per hour
- More return business
- Faster order processing
- New opportunities for outbound telemarketing applications

Competitive Differentiation
- Customers receive more personalized attention

An alternative way of explaining the prime benefits of Desktop CTI is to consider which are tactical and which are strategic. This grouping is portrayed in the following table:

Tactical Benefits	Strategic Benefits
Increased Revenue Employee Satisfaction Reduced Expenses	Customer Satisfaction Competitive Differentiation

2.3 Target Markets

Wherever there is a person working at a desk with a telephone and a computer - there is an opportunity to implement a Desktop CTI application.

Size, Scope, Complexity

There is a wide range of application opportunities across a number of different implementation scenarios. Norstar's Desktop CTI will address every situation, from small stand alone Knowledge Worker, to globally focused, enhanced call center functionality.

Stand Alone Knowledge Workers

Traditionally, CTI applications were only found in formal call centers; as CTI used to be an expensive and complicated undertaking that could only be cost justified in environments with high call volumes and pronounced strategic and financial importance. But with the fairly recent proliferation of PC and LAN technologies, continually reduced price tags for CTI enablers, and innovative new off-the-shelf applications, CTI is now applicable to almost anyone. The graphical user interface that Windows-based telephony brings to the individual's desktop simplifies the use of the standard tools, (i.e. conferencing, directory dialing, etc.) as well as enhances access to other functions (i.e. FAXing, selective review of voicemail, etc.).

Formal Call Centers

A formal call center is where a company will dedicate several people to answer similar kinds of telephone calls. The individuals, or agents within the formal call center specialize in answering incoming calls and concentrate on that activity. A formal call center is one in which the flow of incoming calls is managed to achieve successful customer interaction while maximizing a company's return on investment in equipment and personnel. The management of expense is almost as important as managing service. CTI can reduce cost via increased productivity, (i.e. smaller staff accomplishing the same work objectives).

The call center should be viewed as the strategic business unit that will help manage customer service objectives and commitment to meet customers' growing expectations, (i.e. shorter hold times, auto callback of abandoned calls). It will help increase sales and improve customer goodwill by making companies more accessible to their customers and prospects, (personalized service, expanded revenue opportunities via data base references to other products/services).

Informal Call Centers

Informal call centers, which are fueling much of the small call center growth, also have several people answering similar kinds of calls. These individuals, however, may or may not be dedicated to answering incoming calls. They may be part time agents and perform other duties within the business. Prospects for informal call centers are more difficult to identify as the person answering the call may not be identified as an "agent" or a "telephone service representative". They could be the local expert in a particular department that takes calls from specific customers or during specific times of the day in addition to performing other duties. Typically, an informal call center involves using call center capabilities to provide an enhanced form of customer satisfaction or revenue achievement by making the best qualified persons available by phone.

2.4 Market Applications

Desktop CTI applications address an infinite number of different applications in a variety of horizontal and vertical markets. The generic functions are:

Screen Based Telephony

- Execution of telephone features is simplified by capitalizing on the PC interface. Detailed call logs keep track of call activity, etc.

Screen Pops

- Uses information about the call to select the most relevant data from the associated computer for display on the screen, there are many aspects of incoming call information that are known and can be used to select the data presented to the recipient's screen
- Examples of the types of information includes:
  - Calling line identification
  - Calling line location
  - Incoming trunk number
  - Dialed number
  - Previous answer points
  - Public or private status
  - Queuing time

Intelligent Routing

- Incoming and outgoing calls can be routed based on a multitude of decision rules
- Examples of the types of information includes:
  - Time of day
  - Current activities of people in different departments
  - Information about the incoming call
  - The route taken by the previous calls

Voice and Data Call Association

- As an example of voice/data association, an active call is being handled by an agent whose responsibility is to sell insurance policies. As the call progresses, relevant files are opened, data concerning the caller is displayed, and new data about the caller is entered. Then a problem arises, the caller has a question that the agent is unable to explain. The call is transferred to a specialist and the data follows the call. The specialist has all the necessary information to carry on the transaction, (the caller is not required to repeat the request). Employee satisfaction is enhanced (increased productivity, access to additional information resources). Productivity is increased, costs are reduced, (more customers are served, less employee time, 800 line charges).

Data Transport

- The linkage between the computer and the ICS can be used to transport data, via DTMF tones. Thus, there are application scenarios that use the telephone keypad as an input device to computer applications.

Coordinated Call Monitoring

- CTI can collect combined information on what has transpired between the computer and telephone systems and process this data into meaningful reports that cross references agents activity. These reports can flag business opportunities from the perspective of revenue increases and/or cost reductions.

The following table presents these most relevant CTI-generic functions against the identified benefit categories:

Benefit Category	Cost Savings	Increased Revenue	Employee Satisfaction	Competitive Differentiation	Customer Satisfaction
Benefit Class	Tactical	Tactical	Tactical	Strategic	Strategic
Screen Based Telephony					
Screen Pops					
Intelligent Routing					
Voice and Data Call Association					
Data Transport					
Coordinated Call Monitoring					

Market Benefits

The target markets for Norstar Desktop CTI enablers and applications are businesses who in short, would like to maximize their profits:

Increase Revenue
- More orders per hour
- More return business
- Faster order processing
- New opportunities for outbound telemarketing applications

Employee Satisfaction
- Easier access to phone features
- Elimination of repetitive tasks
- Reduced errors in dialing

Reduced Expenses
- Reduced 800 line charges
- Reduced training expenses
- No custom software development costs
- Easy to modify your applications to meet business conditions

Customer Satisfaction
- Faster call handling
- More accurate call handling
- Personalized answering
- Less time on the phone

Competitive Differentiation
- Customers receive more personalized attention

2.5 Positioning to End Users

2.5.1 Market Drivers - Desktop CTI

Norstar Desktop CTI enablers provide for the convergence of telecommunications and computer/video technologies to create a powerful new kind of communication. The convergence of these technologies has created a new industry and made the promise of integrated multimedia communications a reality. Computer Telephony Integration (CTI), provides companies with the ability to turn a desktop computer into a powerful communications tool that can combine sight, sound, text, animation, video, graphics and other sophisticated telecommunications functions. Used effectively, these capabilities will allow virtually any organization to become more productive, increase revenues, improve customer service and gain a competitive edge.

Quantification of Desktop CTI Benefits

It is not always possible to obtain quantitative feedback regarding the benefits of a CTI installation. Of the many reasons, the most predominant are the fact that such results are often considered confidential, if they are quantifiable at all. The following overview outlines what can be achieved through the implementation of the categorical benefits (as described in the previous section).

There are three ways to look at cost justification for a CTI implementation:

- Hard Dollar Savings
- Soft Dollar Savings
- Revenue Opportunities

How Computer Telephony Installations will be justified will vary from company to company.

Before a cost justification exercise with a customer can begin, it is important to identify the specific customer applications that can be met with voice processing and understand how voice processing will work in those applications.

Hard Dollar Savings

Many companies will evaluate a CTI purchase based on measurable savings that have a bottom line impact - hard dollar savings. The following are examples of hard dollar savings.

<u>Increased Productivity of Support Personnel</u>

In most companies, attendants spend many hours answering calls and taking messages. CTI can be implemented to work with the attendant to provide better service to callers. This is accomplished via the reduction of the number of staff required to answer incoming calls through the implementation of "Screen Pops" that automatically bring up the client's file and associated information thereby reducing the average time per call. This permits the same number of agents to handle more calls or, it can reduce costs by freeing up an attendant's time for other work.

Soft Dollar Savings

Employee Satisfaction

This is a difficult area to quantify. Though there is a known phenomena of "burn-out" in telemarketing agents, there is no evidence that CTI increases the rate of staff turnover at call centers, in fact, the opposite scenario is true. CTI enhances employee satisfaction because it makes the telemarketer's task easier, (enhanced customer service increases employee satisfaction and vice versa).

The following scenarios outline some of the job enrichment benefits that result from CTI:

- avoids negative customer service and removes menial tasks
- enables employees to do their work more easily
- removes some of the frustrations of their work
- improved performance and job satisfaction via automation of repetitive tasks

It is difficult to document soft dollar savings because they are typically unquantifiable and vary from organization to organization. In general, Computer Telephony Applications improve the quality and efficiency of a company's telephone communications. Productivity increases are realized with less time spent on the telephone. Customer service will improve through faster, more efficient interaction and fewer customer calls are going unanswered.

Revenue Opportunity

Increased Revenue

One of the benefit areas that commands a great deal of attention is the ability to increase revenues. CTI applications can produce revenue as well as protect it.

Some benefits which result in increased revenue are:

- Close sales faster
- Generate leads
- Take orders
- Take application requests
- Sell mailboxes
- Satisfy requests for product information

Benefits of CTI that protect revenue are:

- Improved customer service
- Speed up information flow
- Coordinate proposals
- Faster response time
- Assign faster delivery schedule
- Build links to customers, suppliers and distributors

Competitive Differentiation

Quantitative evidence of the competitive-edge benefits provided by CTI is impossible to obtain. Other benefits, such as faster answering times and better informed agents tend to fall under the customer service heading, which can manifest itself in more customers and therefore more sales.

Customer Satisfaction

Much of this experience relates to speedier and more responsive call handling. The benefits of the agents being better informed is somewhat less quantifiable because it is a secondary effect in speeding up the transaction with the customer.

The following scenarios outline some of the customer satisfaction benefits that result from CTI:

- Calls answered faster
- Improved quality of service
- Reduction in "abandoned" incoming calls

Many companies are using call center products to assure successful interaction with customers. "Customer service" is the watchword of the '90s. If the service level does not meet - or beat - expectations, the customer is dissatisfied.

The damage a dissatisfied customer can inflict on a business is much greater than the positive effect a satisfied customer is likely to generate. Studies have shown that an unhappy customer is likely to tell up to ten other people about his or her experience. Compare that to satisfied customer relaying the good news to only three other individuals.

2.5.2 Market Drivers - Computer Telephony Adapter Family of TAPI Enablers

Norstar has expanded its portfolio of TAPI Enablers with the introduction of the family of Computer Telephony Adapters. This section is intended to provide a brief overview of the relative positioning of the various members of this family. For a more detailed description of the individual products, please refer to section 3.0.

Basic Desktop CTI

"Basic Desktop CTI" is defined as the simple linkage of a desktop computer and a telephone set. In this context, TAPI commands are passed from the desktop computer to the telephone and conversely, telephony information is handed to the desktop computer. An example of each scenario follows:

- A screen-based telephony application executing the dialing of a directory item is indicative of a TAPI command's execution,
- The passing of CLID information from the telephone to a screen-pop engine portrays the latter scenario
- Using the PC interface to simplify the use of telephone features such as transfer and call forward

As we can see, "Basic Desktop CTI" is simply the passing of call control information back and forth between the desktop computer and the telephone.

Advanced Desktop CTI

"Advanced Desktop CTI" is the result of a higher degree of integration between the desktop computer and the telephone. In this context, we refer to the capability of bringing more than simple call control to the enabled desktop. This implies a voice link between the desktop and the telephone.

With Advanced Desktop CTI, application scenarios go beyond that which is delivered with "Basic Desktop CTI" to include the delivery and processing of voice-related events and activities. Thus, these "Advanced Desktop CTI" products enable the desktop to evolve with the new application scenarios that will be developed as the industry evolves. Since this level of integration permits a desktop application that incorporates both call control and voice to be carried across the link between the telephone and the Windows 95 PC we now have the capability to run, for example; voice activated dialing, desktop voice mail or an IVR application at the desktop.

Hybrid Desktop CTI

"Hybrid Desktop CTI" is the result of a mixture of integration scenarios between the desktop computer and the telephone. Initially, it involves the simple linkage of a desktop computer and a telephone set as defined by "Basic Desktop CTI". In addition, it also includes the broadband capabilities of ISDN (BRI) connectivity. In short, a desktop enabled with "Hybrid Desktop CTI" is capable of all the feature functionality of Computer Telephony Adapter 100 as well as support for Internet access and LAN dial-up.

The Computer Telephony Adapter 500dm accomplishes this level of integration. Please refer to section 3.2.4 for a brief overview of the Computer Telephony Adapter 500dm, Norstar's "Hybrid CTI" device.

Norstar will introduce the Computer Telephony Adapter 500dm in 1998.

3.0 Product Description

3.1 Introduction

The convergence of personal computers (PC) and telephones has produced a new standard that allows Windows Telephony applications such as Personal Information Managers and PC Dialers to communicate with telephone switches. Norstar Desktop Computer Telephony Integration (CTI) combines Northern Telecom's Norstar portfolio with the power of desktop computing. Norstar is enabled to provide Desktop CTI, that is Telephony Application Programming Interface (TAPI) compliant applications that work with Norstar at the desktop. TAPI is a "standard" software interface developed for writing Desktop CTI applications independent of telephony hardware.

Norstar is refreshing the portfolio of first generation enablers with the Computer Telephony Adapter 100. The Computer Telephony Adapter is positioned as a highly cost effective TAPI connectivity device, to deliver both basic and more sophisticated customer applications.

The material to be covered in this section include:

- Connectivity Devices
- Computer Telephony Adapter 100
- Computer Telephony Adapter 500dm
- Norstar Telephony Application Programming Interface (TAPI)
- TAPI Service Provider (SP) 1.1
- TAPI Applications
- Nortel Applications
- Business Affiliate Program and Partners Program

Please Note: All the Computer Telephony Adapter connectivity devices are bundled with the TAPI SP (see section 3.3.1) and the Personal Call Manager Screen-Based Telephony Application (see 3.4.1.1).

3.2 Connectivity Device

Computer Telephony Adapter 100 is a connectivity device. Its primary purpose is to connect the computer to the phone. In short, these connectivity device is the actual hardware device that sits between the computer and phone. The TAPI SP software is loaded directly on the computer to complete the TAPI integration. PCM provides the screen-based telephony application that enables the end user to activate certain features of the Norstar, using the graphical user interface and the mouse of the Windows 95 PC.

3.2.1 Computer Telephony Adapter 100

The Computer Telephony Adapter 100 is an "Entry Level" TAPI enabler. It is positioned as a cost reduced replacement of the TelAdaptor TAPI Enabler. The Computer Telephony Adapter 100 connects the 7000 series Norstar set to a Windows PC via a RS-232 serial port. This set up provides D-channel connectivity which is required to support basic TAPI applications such as Personal Call Manager (Win 95 only) and VISIT Voice and Fast Call. Like the Teladaptor (which will be "Manufacturer Discontinued") it is a physical hardware device, located at a specific desktop, where a windows based PC is linked to a Norstar set. The Computer Telephony Adapter 100 is recommended for "Basic CTI Users", those that want Call Control and Basic TAPI applications (such as PCM, etc.,).

Since the Computer Telephony Adapter 100 provides TAPI connectivity, Norstar customers will be able to enhance the communication value of their Norstar system by utilizing a wide variety of Nortel or third party applications. This device is the ideal product to stimulate a customer trial of Desktop CTI.

Fig. 3.2.1 Norstar Computer Telephony Adapter 100 connectivity via RS-232

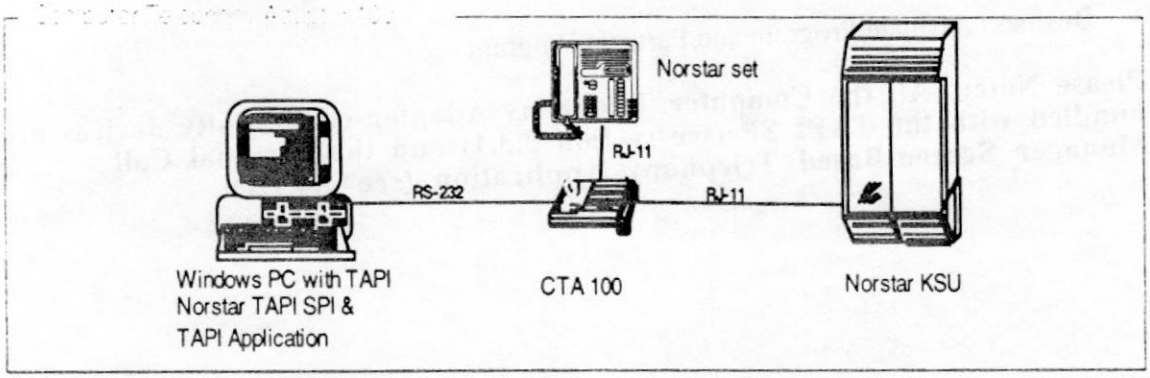


Figure 3.2.1 shows the connection of Computer Telephony Adapter 100 to a Norstar KSU and a Norstar Set. Computer Telephony Adapter 100 is connected to a local PC through RS-232 connection. The RS-232 connection provides serial connectivity to the local PC via a 9 pin connector.

3.2.1a Computer Telephony Adapter 100

Description

- Compact gray unit connected to a PC via serial RS-232 and to the wall jack and a M-7000 series Norstar set via RJ-11 cable (cables are provided in the package)

Advantages

- Simple installation - just plug in the cables, no need to open the PC
- Ideal for self-installation by the end user
- Ideal for sales demos using portable laptop computers
- Low risk of software conflicts since the Computer Telephony Adapter 100 uses COM1 and COM2 software interrupts which are standard

Limitations

- Can not be installed on PC's that have no RS-232 ports available, many PC's now have a serial mouse and a modem attached, so both serial ports are in use
- Impact on throughput of other serial port

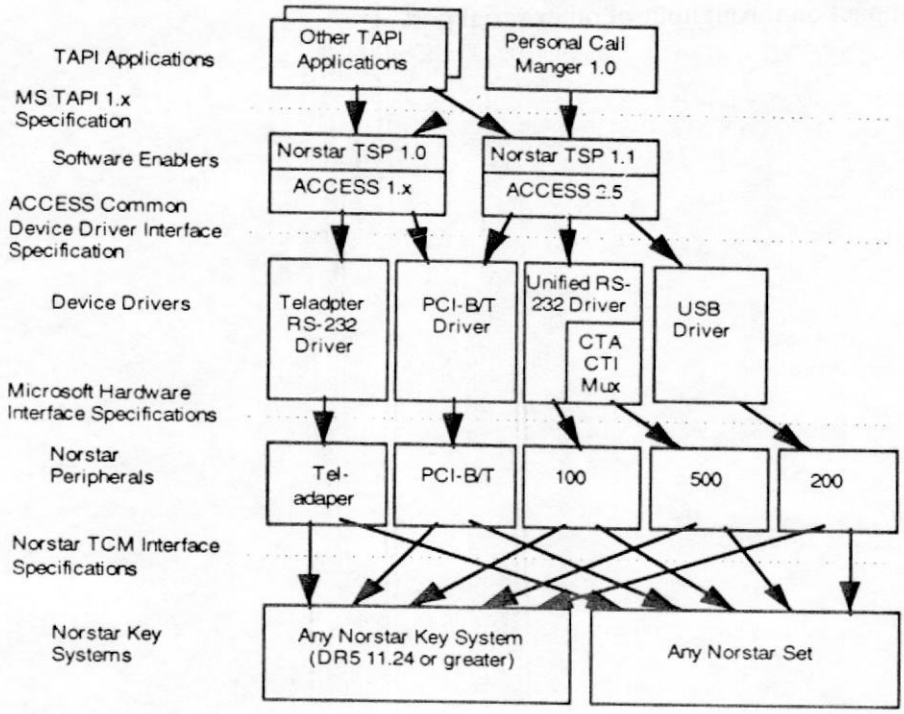
3.3 Software Enablers

3.3.1 Norstar Telephony Application Programming Interface (TAPI) TAPI Service Provider (SP) 1.1

TAPI is a "standard" software interface developed by Microsoft for writing desktop CTI applications independent of telephony hardware. TAPI applications are examples of "first" party call control where the application is controlling the attached telephone in a one-to-one relationship. A TAPI application runs on the user's desktop computer (TAPI compatible Windows environments). With TAPI, application developers have an industry standard API that works with all compliant telephone and computer platforms.

The following picture provides an overview and description of the TAPI architecture for Norstar.

Norstar TAPI Architecture



It is important to recognize that TAPI is only an enabler, it translates "requests" that are generated during the execution of an application sitting on the desktop computer. For instance, "requests" that can be generated by a screen-based telephony application are; make call, answer call and, drop call. TAPI processes a call as follows:

1. The user's action is translated into a TAPI command and sent to the Norstar Service Provider.
2. The Norstar TAPI Service Provider translates the TAPI command into a telephony feature and sends the information to the connectivity device (i.e. the Computer Telephony Adapter 100).
3. The Desktop CTI connectivity device sends the information to the Norstar Core Unit and Norstar telephones.

Note: this scenario is reversed if the call is initiated by the Norstar.

3.4.1.1a Personal Call Manager Features

1. Norstar Address Book

The Address Book is the portion of Personal Call Manager where you store the telephone numbers and addresses of the people and businesses you deal with. Each entry in the Address Book is called a contact. A contact is normally the telephone number of a person or business, but can be any number you want to keep track of or store in PCM. The Address Book consists of two parts:

1. Customizable hierarchical tree view of contacts
   - When you view the Address Book, the left side shows the tree structure of the Address Book (Fig. 3.4.1.1). The tree structure shows how the folders are organized. It also allows you to select the folder you want to view
   - The contacts are stored in two main areas:
     1. Quick Dials - Contacts added to the Quick Dials section appear on the Calls menu and the Personal Call Manager task tray menu. You can add contacts to the Quick Dials section, but not folders.
     2. My Contacts - Contacts added to the My Contacts section do not appear in the Calls or Personal Call Manager task tray menu, but can easily be accessed from the Address Book. In the My Contacts section, you can add contacts and folders.
2. List view portion of the Address Book
   - On the right side of the screen is the List View of the Address Book. The List View shows the contacts and folders stored in the folder selected in the Tree View.
   - The List View of the Address Book can be viewed in four different formats: large icons, small icons, list, and detail.

Other characteristics of the Norstar Address Book include:

- Extended information on each contact including business, Email Address, Settings, and Note
- Import/export test files
- Sound file storage "Bob calling"
- Storage of bit map images in contact window

3.4 Desktop CTI Applications

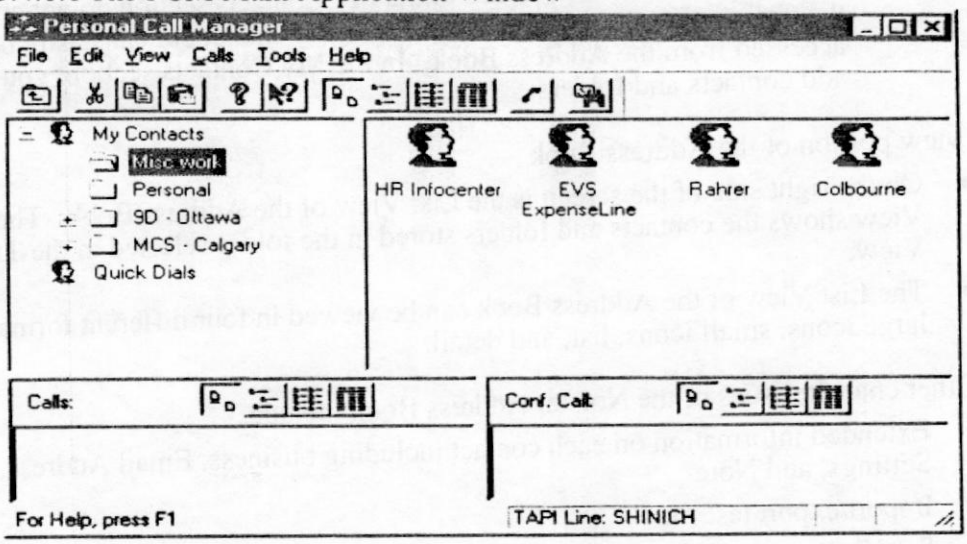
3.4.1 Nortel Applications

3.4.1.1 Personal Call Manager (PCM)

Norstar Personal Call Manager is screen-based telephony, application designed for use on the Windows 95 operating system. It is optimized for use with the Norstar TAPI Service Provider and raises Norstar feature utilization to new levels of simplicity and functionality.

PCM has two main models of operation: operation from the Windows 95 task tray and operation form the main application window. The most common telephony tasks such as dial, hang-up, transfer and conference can be performed from the task tray icon. As well, access to the last callers/called list and quick dials is available from the icon. For more complex telephony operations as well as access to the personal address book, a main application window is provided. The look-and-feel of this window follows the Windows 95 style guidelines.

Figure 3.4.1.1 The PCM Main Application Window



Call Control From The PC

- Drag and Drop Call Control
  - Dialing, Transfer and Conference
- Discreet Incoming Call Handling
  - Small dialog does not grab focus
  - Incoming calls can be rerouted without answering
- Hierarchical Directory
- Built to fit in Win97/Internet Explorer 4.0 User Interface Model
- Low learning Curve
  - Conforms Windows Explorer UI
- Widely Available
- Future Feature Enhancements

2. First Party Call Control

1. Dial
   - Using PCM, you can make a call using the task tray or Calls menu, the toolbar, the Address Book, or the Quick Dial list.

2. Answer/Hold/Unhold
   - PCM notifies you when there is an incoming call. When someone calls you, the "You Have a New Call " dialog box appears, and the Ringing icon appears in the Calls box, the PCM task tray menu and the Calls menu. If you subscribe to a CLID service, or you are receiving an internal call through Norstar, the name or number of the caller appears below the icon and in the "You Have a New Call" dialog box
   - When a call is put on hold, the icon for the call changes from the Active Call icon to the Held Call icon
   - You can answer a held call using the task tray or Calls menu

3. Multiple Calls
   - Personal Call Manager can control several calls at once. The maximum number of calls is equal to the maximum number of lines available. All of the calls currently connected appear on the Personal Call manager task tray menu, the **Calls** menu, and the main window.
   - Although several calls can be controlled, only one call can be active at any time, except if you have a conference. In a conference, you can have two active calls. When you answer a held call, the currently active call is automatically put on hold. This allows you to switch between held calls simply by answering the caller you want to talk to.

4. Conference
   - In a conference call you are connecting yourself and two other people onto a single call. To create a conference you must have at least two lines, one for each caller. These two lines can be external lines or intercom lines
   - When you put a conference on hold, both calls are put on hold. Neither caller can speak to you but the two callers can speak to each other
   - When you split a conference, the conference is ended but both calls remain connected. One of the callers becomes the active call and the other call is put on hold. Since the conference is ended, the two callers can no longer speak to each other
   - When you end a conference, you are removing yourself from the conference and allowing the other two callers to continue to talk to each other. While the other callers are talking to each other they are still using two of your telephone lines. If you want to end the conference and disconnect both the callers, split the conference and then release the calls

5. Transfer (blind and announced)
   - PCM allows you to transfer a call to a different telephone. You can transfer the with an announcement or without. With an announcement, you are calling the person you are transferring the call to before you actually transfer the call. Announcements are used to inform the person who the caller is and why they are calling

- When you transfer a call without an announcement, you are transferring without checking if the person is available to answer the call. This is known as a blind transfer

6. Call Forward
   - The number your telephone is forwarded to appears on the Status Bar. Call forwarding you telephone to an external telephone number is not supported when you are using the Norstar TAPI SP

7. Do Not Disturb (DND)
   - When DND is enabled, the telephone will not ring when someone calls, but the line indicator still flashes. It will show a check mark if the system is in the DND state. In PCM, *You Have a New Call dialog* box still appears and the icon for the call appears in the Calls box

8. Calling Line Identification
   - Telephone numbers are only shown on the Last Callers list if, you subscribe to a CLID service

9. Call Duration
   - Is a running count of how many minutes the call has been connected

10. Last Callers/Calls Log With Call Details
    - PCM keeps a list of the telephone numbers of people who called you. The Last Callers list shows both the calls you answered and the calls you were unable to answer. You can use the list to return the calls PCM keeps a list of telephone numbers you called. The most recent call is at the top of the list and the oldest call is at the bottom. If you call a number that is already on the list, the number does not appear on the list a second time

3.4.1.2 Visit Applications

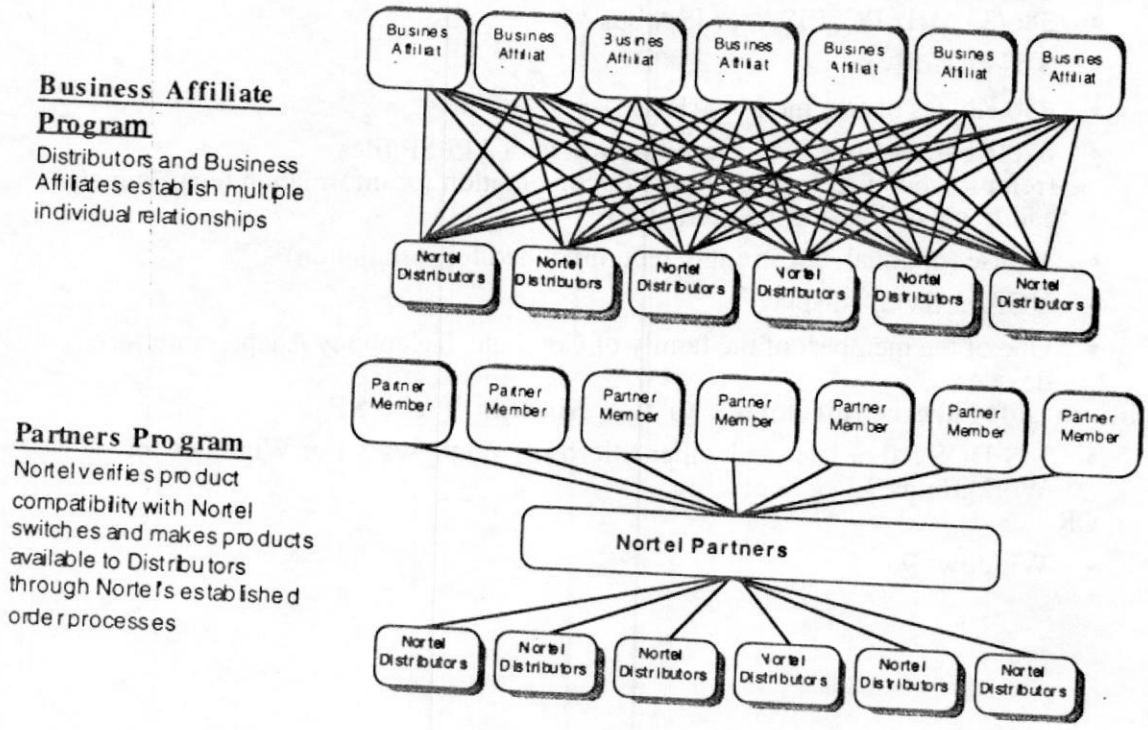
Visit Voice and FastCall are a part of the portfolio of VISIT applications. VISIT Voice is a call manager application. FastCall is part of a family of PC-based multimedia communication applications developed for Nortel. Refer to appendix A for further details on the VISIT applications portfolio

3.4.2 Business Affiliate Program And Partners Program

The Nortel Business Affiliate Program is designed to provide technical and marketing support to companies who work closely with Nortel customer and distributors in delivering CTI solutions. Refer to appendix B for more information on the Nortel's Business Affiliate Program.

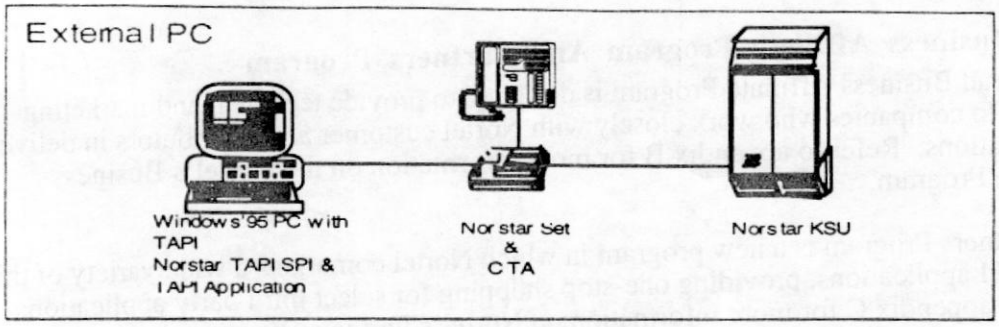
The Partners Program is a new program in which Nortel comarkets a wide variety of third party CTI applications, providing one-stop shopping for select third party applications. Refer to appendix C for more information on Nortel's Partners Program.

Figure 3.4.2 Overview of the Business Affiliate Program and the Partners Program



3.5 System Requirements

3.5.1 TAPI System Requirements



Minimum hardware requirements to use Norstar TAPI SP:

- 386/33 MHz PC, EISA, or ISA bus
- 3.5" disk drive
- 450 Kbytes of free memory (RAM)
- 820 Kbytes of free disk space for Norstar TAPI SP files (refer to your TAPI application's documentation for information regarding any additional disk space requirements)
- Mouse (optional, but strongly recommended for installation)
- VGA or SVGA display
- One of the members of the family of Computer Telephony Adapter interface devices

Minimum software requirements to use Norstar TAPI SP

- MS-DOS 5.0 or later and either Microsoft Windows 3.1 or Windows for Workgroups 3.1 or later

OR

- Windows 95

3.5.2 Personal Call Manager System Requirements

The following minimum system requirements must be met by any computer wishing to run the PCM software:

- Windows 95 or greater
- CD-ROM or 3.5" floppy disk
- 8 MB RAM (16MB recommended)
- 8 MB free disk space
- 486 DX or greater processor
- TAPI service provider and supporting hardware

Note: the Personal Call Manager application requires a Windows 95 operating system, while the Norstar TAPI SP's system requirement is Windows 3.X or greater. As such, the TAPI SP can operate on a multitude of Windows platforms, the Personal Call Manager application is limited to Windows 95 environments only.

3.6 Components

Item	Description
TAPI SP 1.1	TAPI SP 1.1 (software only) • one 3 1/2" Diskette • Installation Guide (softcopy only) • User Guide (softcopy only)
Personal Call Manager Application (PCM)	PCM (software only) • one CD-ROM disk (note: only available on CD-ROM) • User Guide (softcopy only)
Computer Telephony Adapter 100	Computer Telephony Adapter 100 • TAPI SP 1.1 (as above) • Personal Call Manager (as above) • Computer Telephony Adapter 100 Unit • Power Supply • RJ11 Line Cord • D9M - D9F Cable (RS232) • Installation Guide (hardcopy) • User Guide (softcopy only)

3.7 Compatibility

North American Key Systems Supported by Norstar TAPI

Common Name	KSU	Platform*	Version**
3x8 DR5	3x8	DR5	30NPE00
Compact DR5	6x16	DR5 (CDR5)	30NSE04
Modular DR5	8x24	DR5 (MDR5)	30MUL07
MICS	0x32	DR6 (T1)	30nCG19
MICS XL	0x32	US XL	30HGl02
MICS XC	0x32	US XC	30HGF02
CICS		1.0	30JSH03

* Platforms not appearing in this table are not currently supported

** It is recommended that this or a higher version be used

3.9 Installation And Maintenance

The following table provides estimate for planning Norstar-PLUS TAPI SP desktop enabler installations.

The following assumptions have been used in making these estimations:

- The installer has received training
- A fully functioning Norstar (equipped with CLID capabilities) already exists

ACTIVITY	TIME REQUIRED	COMMENTS
Installing CTA 100	10 minutes	1. Unpack and place the CTA device in the desired position between the telephone and the PC 2. Attach all the cables between the components 3. Install TAPI SP on a Windows enabled PC
Installing Norstar TAPI SP software	5 minutes	1. Insert the Norstar TAPI SP disk (Disk 1) in the floppy disk drive 2. Run **setup.exe** from the floppy disk using the following steps: • Windows 95 - Select **Start** from the Taskbar Menu • Click **Run** • Type **A:\setup** in the Run dialog box • Click **OK** 3. Click **Continue** to verify that you want to install TAPI SP 4. Click **Install** to start installing the TAPI SP files 5. Select the *Device Type* appropriate to the interface device you have installed on your PC 6. Select the appropriate values in the *Properties* dialog box, the click **OK**, now you will return to the Nortel SP Configuration dialog box 7. Click **OK** when you have finished with the Nortel SP Configuration dialog box 8. Click **YES** to confirm changes to AUTOEXEC.BAT. 9. Click **OK** to confirm 10. When the *Installation Complete* dialog appears, you can click either **View README** to see the README.TXT file, or **Return to Windows** to exit the setup program 11. Restart your PC • At this point you may now install, configure, and run the TAPI application(s)
Configuration of TAPI SP	6 minutes	1. Locate the **Control Panel** icon as follows: • Windows 95 - Double-click the **My Computer** icon

2. Double-click on the **Control Panel** icon
3. Double-click on the **Telephony** icon
   - The *Telephony Properties* dialog box displays
4. Click on the **Norstar Telephony SP** entry to highlight it, and click **Setup**
5. Choose the correct interface device and serial port that it is connected to and click **OK**
6. Click **OK** on the *Norstar SP Configuration* dialog box when you have finished modifying the configuration
7. Restart your PC so that the changes can take effect

Installing Personal Call Manager	3 minutes	1. There is no hardware installation 2. To run the setup application, select "Run..." from the Start button menu on the Windows 95 task bar 3. Type "a:\setup" and follow the instructions - the user will be given the opportunity to specify for installation and other installation options

3.10 Troubleshooting Capabilities of TAPI SP

To expedite the process of solving a TAPI SP problem, there are several self diagnostic subroutines that are embedded in the TAPI SP. Some of these will automatically execute thereby providing an opportunity to resolve the problem, without the need to call for technical assistance. Others will provide the technical support specialist with information that will aid in resolving the problem.

Line Cord Status

If the telephone line cord is disconnected, a status window appears indicating the condition and that the line cord should be checked.

AC Power Status

If the AC power is disconnected (teladapter only), a status window appears indicating the condition and that the AC power supply should be checked.

Switch/Service Provider Details Box

The following details, outlining the status of various components of the TAPI SP (this information assists in remote service scenarios) is available from an information window:

- Status - (in service), TAPI SP is initialized if **YES** appears
- Status - (unlocked), Norstar phone can be controlled if **YES** appears
- Switch information - (type), indicates type of Norstar switch
- Switch information - (version), indicates version of the KSU's software
- Service Provider information - (label), descriptive version of TAPI SP
- Service Provider information - (version), numeric version of TAPI SP
- Service Provider information - (status), indicates TAPI SP is **In Service**

4.0 Competition

This section describes the TAPI offerings and the CTI applications strategy of each of the following competitors:

4.1 Lucent Technologies
4.2 Toshiba
4.3 Inter-Tel
4.4 Comdial
4.5 Panasonic
4.6 Nitsuko
4.7 Vodavi
4.8 Executone

In addition, the advantages of Norstar's TAPI solution over each competitor's solution is highlighted.

The tables on the following page summarize the key elements of each competitors' TAPI solution. Specifically, the table answers the following questions:

- Is a TAPI service provider offered?
- What type of TAPI hardware device is used?
- Does the TAPI device have USB connectivity?
- Is a CTI application, such as Personal Call Manager, bundled with the TAPI service provider and/or hardware device?
- Is a TAPI Developers Toolkit offered?
- Does the vendor have a CTI developers program? Is the program for TAPI developers or proprietary desktop interface developers? (TAPI or Prop)
- Are CTI applications marketed via a developer catalogue (similar to Nortel Business Affiliates)?
- Are CTI applications co-marketed with the developer (similar to Nortel Partners)?
- Which of the vendors' key systems are TAPI compliant?

TAPI Solutions Summary Tables

Blanks in the table indicate that the information is not available.

	Nortel	Lucent	Toshiba	Inter-Tel	Comdial
TAPI Service Provider	√	-	√	√	√
TAPI Hardware					
- External Desktop Box	√	-	-	-	√
- Internal PCIB Card	√	-	-	-	-
- TAPI Phone	-	-	-	-	-
- Internal Stn Set Device	-	-	-	-	-
USB Connectivity	√	-	-	-	-
Bundled Application	√	-	-	√	√
TAPI Toolkit	√	-	√	√	√
Developers Program	TAPI	Prop	TAPI	TAPI	TAPI
- Catalogue	√	√	-	√	√
- Co-Marketing	√	√	-	√	√
KSUs Compliant	Norstar		DK8 DK16 DK16e DK280	AXXESS Axxent	DigiTech DXP

	Panasonic	Nitsuko	Vodavi	Executone
TAPI Service Provider	-	√	Future	√
TAPI Hardware				
- External Desktop Box	-	-	Future	-
- Internal PCIB Card	-	-	Future	-
- TAPI Phone	-	√	-	√
- Internal Stn Set Device	-	-	-	-
USB Connectivity	-	-	-	-
Bundled Application	-	-	Future	√
TAPI Toolkit	-			-
Developers Program	-	-		
- Catalogue	-	-		-
- Co-Marketing	-	-		
KSUs Compliant		124i 384i	V-Series	IDS

4.1 Lucent Technologies

Neither the Lucent Merlin Legend or Partner systems is currently TAPI compliant. However, both products do support the PassageWay Direct Connection proprietary CTI interface.

The PassageWay Direct Connection Solution includes the PassageWay Device, documentation and five software applications. The PassageWay Device connects to the PC and the Lucent Partner or Legend phone set in a manner similar to connecting a Computer Telephony Adapter 100, 200 or 500dm to Norstar, but no external power supply is required. The applications included in the package are simple and offer basic features. AT&T Call is a basic call control and rolodex application. AT&T Buzz allows a screen pop from AT&T Call or other compatible application. AT&T Connect is the proprietary middleware used to arbitrate between PassageWay applications. AT&T Set allows programming of the buttons on the attached set from the PC screen. AT&T Log maintains a record of incoming and outbound calls.

CTI Applications Strategy

Lucent sells a PassageWay Direct Connect Software Developers Kit. This kit now includes a TAPI Software Development Kit for creation of TAPI applications for the recently TAPI enabled Lucent Definity PBX system. Merlin Legend and Partner are not presently TAPI compliant.

Lucent has a PassageWay CTI applications marketing program called the BusinessWorks Alliance Program which is a source of information and assistance for application developers. BusinessWorks has a quarterly newsletter and an annual developer conference, as well as, special consulting services to offer developers. The program has three tiers.

"Alliance Catalog Products" are the foundation of the program. Lucent provides participating developers with product visibility by placing its products in an applications catalogue that is distributed to Lucent customers. Presently, the BusinessWorks Applications Catalogue contains only software applications designed specifically for the Definity PBX system.

"Independent Software Vendor Referrals Products" are those that Lucent salespeople can recommend to satisfy specific customer applications needs. These products are compatibility tested with Lucent systems and must be successfully deployed to a number of satisfied Lucent customers.

"Featured Software Offers" are those applications products which Lucent elects to market, sell, service and support. These products undergo rigorous testing by Bell Labs.

Distribution of CTI Products

Lucent's PassageWay CTI products are distributed via their sales staff, the BusinessWorks Alliance product catalogue and Lucent's Sourcebook catalogue.

Norstar Advantages:

- Lucent Legend and Partner are not TAPI compliant.
- The PassageWay hardware device requires an RS-232 port on the PC for connection. In the event that the PC's RS-232 ports are in use for a modem and a serial mouse, a RS-232 expansion card (ISA card) must be purchased and installed in the PC to allow

connection of the PassageWay Device. In addition to the Computer Telephony Adapter devices which require an RS-232 connection, Norstar offers the Computer Telephony Adapter 150i, a TAPI PCIB card, for implementation in situations where there are no RS-232 ports available. The PCIB card eliminates the need to purchase two pieces of hardware for TAPI connectivity and removes exposure to RS-232 signaling issues.

4.2 Toshiba

Toshiba supports TAPI on their entire family of Strata DK products: DK8, DK16, DK16e and DK280. However, for CTI capabilities using Automatic Number Identification (ANI) or Calling Line Identification (CLID) a DK280 Release 3 or DK16e is required.

Toshiba's only TAPI device is an optional Integrated Personal Computer Data Interface Unit (RPCI-DI) which installs inside any DKT2000 series telephone set and connects to the PC via an RS-232 interface. The TAPI Service Provider Software is included with the interface. The service provider is written to the TAPI 1.3 specification and will only work with applications written explicitly to support the 1.3 specification.

CTI Applications Strategy

Toshiba offers the TAPI/DIU Software Developers Kit which includes the hardware and support needed to develop TAPI software applications for the Strata DK. Their developer's program is targeted at authorized Toshiba dealers and independent software vendors.

Toshiba's involvement is CTI applications ends with their developers toolkit. No applications are bundled with their TAPI hardware and service provider and Toshiba does not co-market or sell any CTI applications. This strategy is consistent with Toshiba's position as a self-admitted follower in the CTI market.

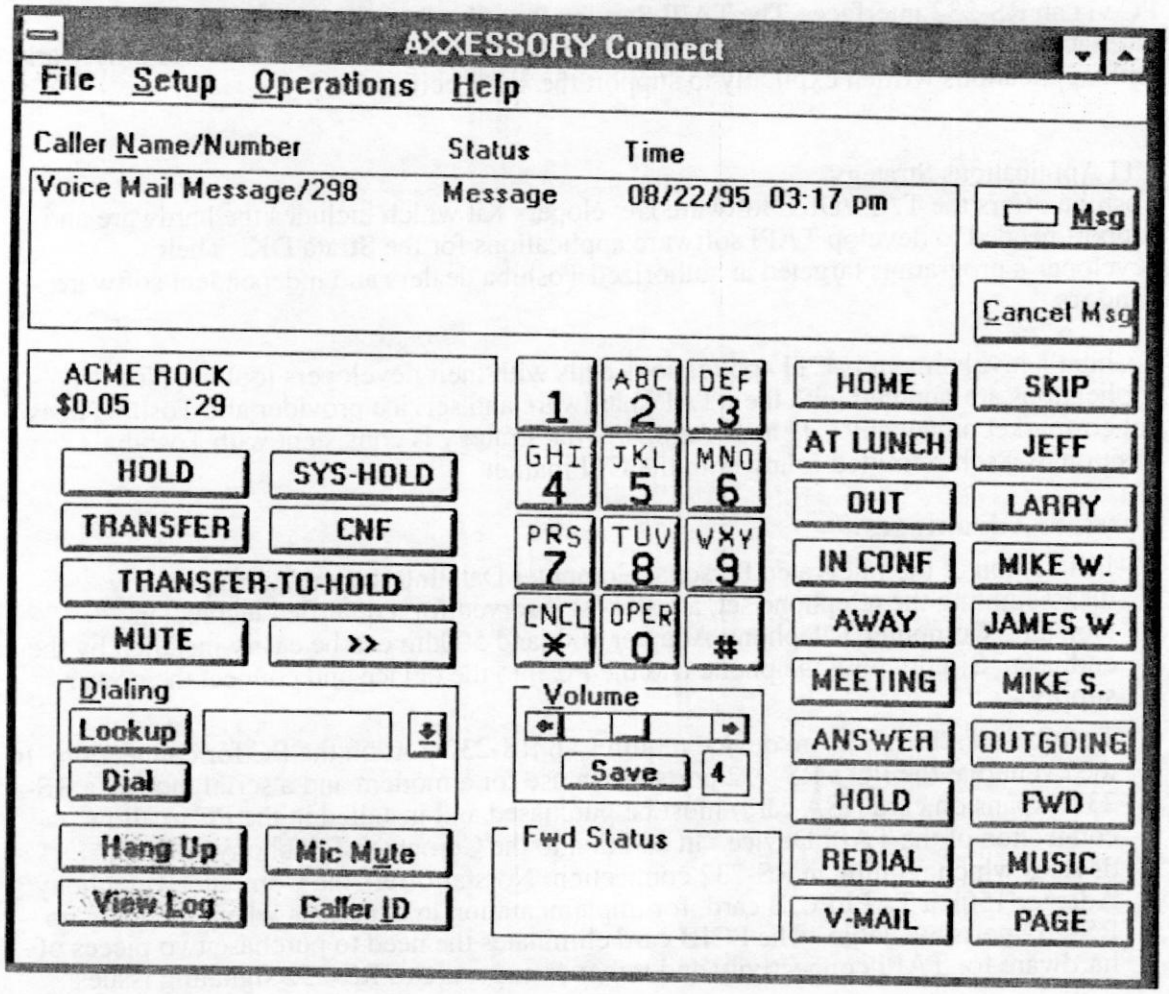
Norstar Advantages:

- Installation of the Integrated Personal Computer Data Interface requires partially disassembling the telephone set, a task best reserved for a qualified technician. Norstar's Computer Telephony Adapter 100, and 500dm can be easily installed by the end user. Simply plug the phone and the PC into the device and connect the power supply.
- Toshiba's TAPI hardware device requires an RS-232 port on the PC for connection. In the event that the PC's RS-232 ports are in use for a modem and a serial mouse, a RS-232 expansion card (ISA card) must be purchased and installed in the PC to allow connection of the TAPI Device. In addition to the Computer Telephony Adapter devices which require an RS-232 connection, Norstar offers the Computer Telephony Adapter 150i, a TAPI PCIB card, for implementation in situations where there are no RS-232 ports available. The PCIB card eliminates the need to purchase two pieces of hardware for TAPI connectivity and removes exposure to RS-232 signaling issues.
- Setting up Toshiba's TAPI service provider involves a tedious process in which the installer must manually program the software with the function of each button on the attached telephone set. Also, the Strata DK system programming must be entered and altered for each TAPI enabled station. TAPI set up on Norstar is easily accomplished by attaching the Computer Telephony Adapter device and loading the service provider on the PC. No additional PC or phone system programming is required.
- No CTI application is bundled with Toshiba's TAPI enabler. Norstar's Computer Telephony Adapters come bundled with the Personal Call Manager application.

- Nortel's Business Affiliates and Partners programs allow Norstar customers "one stop" CTI applications shopping. Strata DK customers must seek out CTI applications from other retailers or purchase them directly from developers.

4.3 Inter-Tel

Inter-Tel supports TAPI on their AXXESS V2.1 and higher systems and Axxent V1.0 and higher systems. The TAPI service provider software is bundled with their AXXESSORY Connect V2.0 software package. AXXESSORY Connect is a Windows interface software application which allows call control from the PC including answer call, dial, hold, conference, forward, transfer and do not disturb. Also, AXXESSORY Connect has screen pops, feature directories, voice mail access, a name directory and a call log. In addition to the AXXESSORY Connect package, a PC Data Port Module (PCDPM) is required to enable TAPI and it must be installed in the base of the Inter-Tel telephone set.



CTI Applications Strategy

Inter-Tel has three developer's toolkits available. The Desktop OAI Developers Toolkit allows developers to create proprietary desktop software applications or TAPI desktop applications and comes with a copy of AXXESSORY Connect V2.0. The System OAI Developers Toolkit allows development of proprietary system software applications or TSAPI applications. The Desktop OAI Visual Basic Toolkit is also available and allows even end users with little programming experience to build simple telephone applications for their AXXESS and Axxent systems.

Developers are offered technical support from Inter-Tel. This includes phone support, e-mail support, electronic bulletin boards and a quarterly developers newsletter. In addition, Inter-Tel offers technical training programs for their developers.

Inter-Tel's CTI applications marketing program is structured in three layers. Level 1 of the program is known as the "3rd Party Products" category. In this developer relationship, Inter-Tel will introduce CTI application products to their dealers and interested dealers will contact the developer directly for product purchase and support.

Level 2 is "Partnership Products" which are tested by Inter-Tel for AXXESS and Axxent compatibility. Products in this category are distributed through Inter-Tel's Factored Products division and their Customer Connection product catalogue and Inter-Tel assumes accounts receivable responsibility. The developer remains responsible for technical support, marketing collateral and brochures, sales training and sales support.

Level 3 is "OEM Products" and is reserved for developers who create an exclusive version of their CTI application for Inter-Tel to distribute under the Inter-Tel name. At this level, Inter-Tel assumes product and technical support responsibility, jointly creates marketing collateral with the developer, provides sales training and support, and demonstrates the product in Inter-Tel presentations.

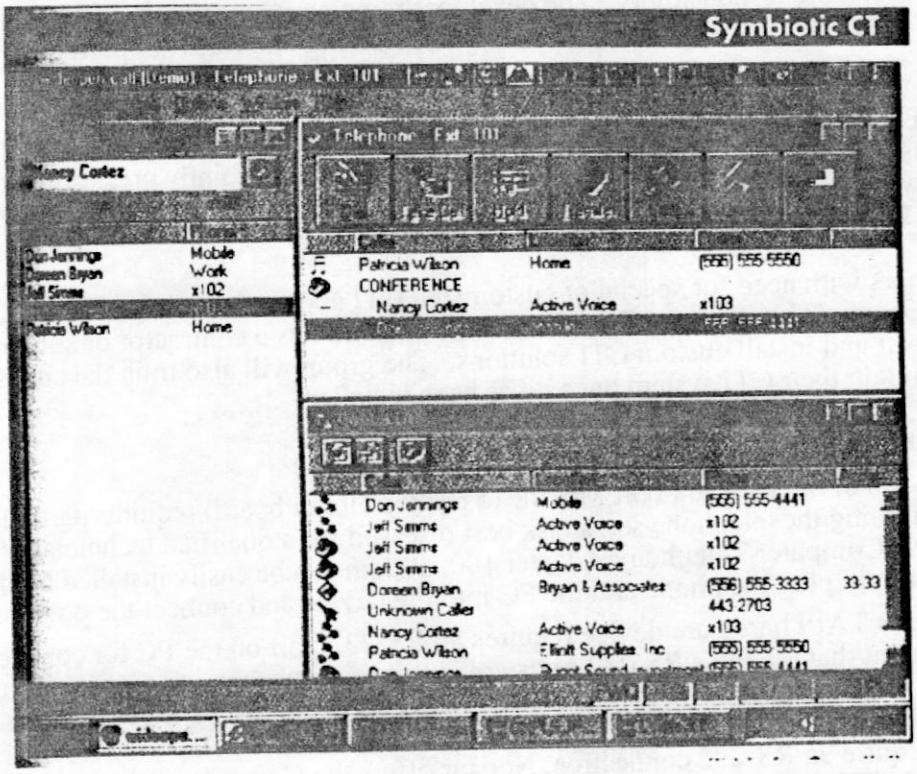
For customers with need for special or customized CTI applications, Inter-Tel has its CTI Solutions Group. This group will work with the customer as a contractor or sub-contractor to design, test and install custom CTI solutions. The group will also train the customer on how to maintain their CTI system once it has been installed.

Norstar Advantages:

- Installation of the PC Data Port Module (a printed circuit board) requires partially disassembling the telephone set, a task best reserved for a qualified technician. Norstar's Computer Telephony Adapter 100, 500dm can be easily installed by the end user. Simply plug the phone and the PC into the device and connect the power supply.
- Inter-Tel's TAPI hardware device requires an RS-232 port on the PC for connection. In the event that the PC's RS-232 ports are in use for a modem and a serial mouse, a RS-232 expansion card (ISA card) must be purchased and installed in the PC to allow connection of the TAPI Device. In addition to the Computer Telephony Adapters which require an RS-232 connection, Norstar offers the Computer Telephony Adapter 150i, a TAPI PCIB card, for implementation in situations where there are no RS-232 ports available. The PCIB card eliminates the need to purchase two pieces of hardware for TAPI connectivity and removes exposure to RS-232 signaling issues.
- Setting up TAPI on the Inter-Tel systems requires extensive KSU programming. The "Desktop Interface Premium" feature must be enabled on the system and for each CTI enabled station programming must be entered and altered and the bit rate at which the station is connected to the PC must be know and entered. TAPI set up on Norstar is easily accomplished by attaching the Computer Telephony Adapter device and loading the service provider on the PC. No additional PC or phone system programming is required.

4.4 Comdial

Comdial has very recently introduced a TAPI device for its Impact line of phones which operate on the DigiTech and DXP key systems. The Personal Computer Interface Unit (PCIU) is very similar to Norstar's Computer Telephony Adapter 100, 200 and 500dm devices. The PCIU is a small (5"x5") black box into which the user plugs his Impact telephone, an RS-232 connection to his PC and a power supply. The PCIU comes with a TAPI service provider disk and a single license of Comdial's WideOpen.Call application. WideOpen.Call includes three mini applications: telephone control, a basic Personal Information Manager (PIM) and a call log. Telephone control allows outbound dialing, call transfer, hold, take call, conference and disconnect. The PIM is a simple screen pop which displays names, addresses, phone numbers, action item list and notes. The call log records all inbound and outbound calls. WideOpen.Call is pre-configured with DDE integration to most PIMs including Act!, Goldmine, Maximizer and Daytimer.



Comdial has also been heavily promoting its PATI 3000 device. This TAPI device links standard analog single line phones to PCs. The device comes with the TAPI service provider and PhoneKITS application software. PhoneKITS provides a mini dialer, PC phone, call log, caller ID support and an address book. This device can only be used with analog phone systems, not digital systems like the DigiTech and DXP.

CTI Applications Strategy

Comdial offers a number of software developers kits. Third party developed CTI applications are marketed via Comdial's CT Direct Catalogue. Applications are purchased directly from Comdial but the developer remains responsible for product support.

Distribution of CTI Products

Comdial's CTI enablers and applications are available through their supply house channel, CT Direct catalogue sales and Ingram Micro.

Norstar Advantages:

- Comdial's TAPI hardware device requires an RS-232 port on the PC for connection. In the event that the PC's RS-232 ports are in use for a modem and a serial mouse, a RS-232 expansion card (ISA card) must be purchased and installed in the PC to allow connection of the TAPI Device. In addition to the Computer Telephony Adapters which require an RS-232 connection, Norstar offers the Computer Telephony Adapter 150i, a TAPI PCIB card, for implementation in situations where there are no RS-232 ports available. The PCIB card eliminates the need to purchase two pieces of hardware for TAPI connectivity and removes exposure to RS-232 signaling issues.
- Norstar has a much broader portfolio of CTI enablers than does Comdial and our CTI applications strategy equals that of Comdial.

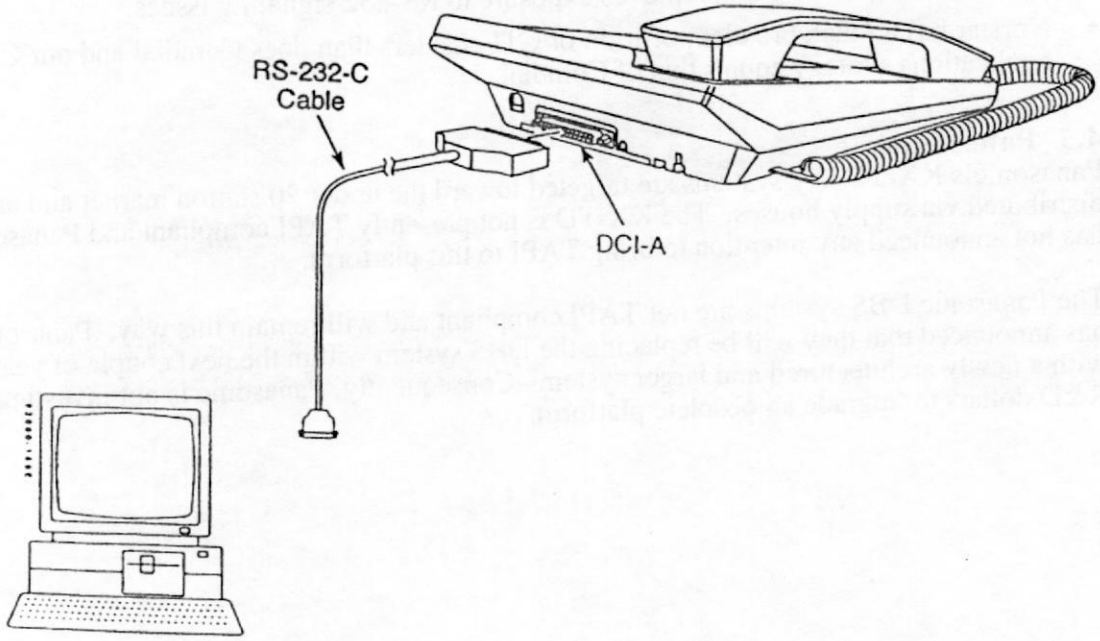
4.5 Panasonic

Panasonic's KX-TD key systems are targeted toward the under 20 station market and are distributed via supply houses. The KX-TD is not presently TAPI compliant and Panasonic has not announced any intention to bring TAPI to this platform.

The Panasonic DBS systems are not TAPI compliant and will remain this way. Panasonic has announced that they will be replacing the DBS system within the next couple of years with a newly architectured and larger system. Consequently, Panasonic is not investing R&D dollars to upgrade an obsolete platform.

4.6 Nitsuko

Nitsuko implementation of TAPI on the Optima 124i and 384i requires the DCI-A Telephone Data Module and the TAPI service provider diskette. The DCI-A installs inside a 24 Button Super Display Phone, a 32 Button Standard Phone or a 32 Button Display Telephone. A maximum of 72 DCI-A modules can be installed on the 124i and 144 modules can be installed on the 384i. The DCI-A module and TAPI service provider are available as a package.



CTI Applications Strategy

Nitsuko does not bundle any software application with their TAPI enabler package. And, Nitsuko does not co-market or sell any CTI applications. The customer is on his own to seek out TAPI applications to run on the system.

Norstar Advantages:

- Installation of the DCI-A module requires partially disassembling the telephone set, a task best reserved for a qualified technician. Norstar's Computer Telephony Adapter 100, and 500dm can be easily installed by the end user. Simply plug the phone and the PC into the device and connect the power supply.
- Nitsuko's TAPI hardware device requires an RS-232 port on the PC for connection. In the event that the PC's RS-232 ports are in use for a modem and a serial mouse, a RS-232 expansion card (ISA card) must be purchased and installed in the PC to allow connection of the TAPI Device. In addition to the Computer Telephony Adapters which require an RS-232 connection, Norstar offers the Computer Telephony Adapter 150i, a TAPI PCIB card, for implementation in situations where there are no RS-232 ports available. The PCIB card eliminates the need to purchase two pieces of hardware for TAPI connectivity and removes exposure to RS-232 signaling issues.
- TAPI enabling the Optima system requires a technician as Nitsuko key system programming must be entered and altered for each TAPI enabled station. TAPI set up on Norstar is easily accomplished by attaching the Computer Telephony Adapter device

and loading the service provider on the PC. No additional PC or phone system programming is required.

- No CTI application is bundled with Nitsuko's TAPI enabler. Norstar's Computer Telephony Adapters come bundled with the Personal Call Manager application.
- Nortel's Business Affiliates and Partners programs allow Norstar customers "one stop" CTI applications shopping. Nitsuko customers must seek out CTI applications from other retailers or purchase them directly from developers.

4.7 Vodavi

At the CTI Expo in March 1997, Vodavi demonstrated a TAPI box and a TAPI PCIB card for use with its new V-Series digital key system. The TAPI hardware will come bundled with a CTI application similar to Norstar's Personal Call Manager. No further product details or pricing is available at this time. Vodavi's TAPI package will not be orderable for another six months.

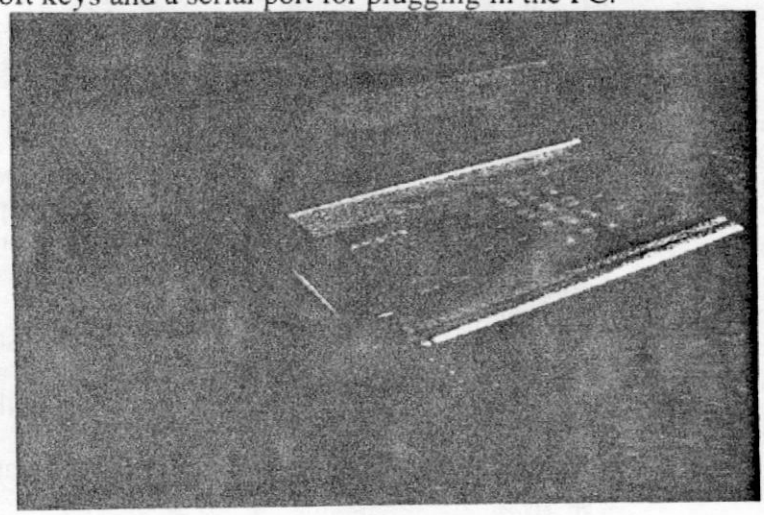
Presently, Vodavi has a proprietary CTI offering for its STARPLUS phone system. The PC Interface Telephone can be connected to a PC via a serial port on the phone and the STARPLUS PC Phone for Windows software application can be loaded on to the PC to provide call control, voice mail access and system feature access from the PC. Additionally, STARPLUS PC Phone for Windows includes a Personal Information Manager (PIM).

Distribution of CTI Products

Vodavi's CTI products are distributed via their normal supply house distribution channel and also through Ingram Micro.

4.8 Executone

Executone offers a TAPI application package for the IDS key system which consists of their TAPI-160 telephone set, the TAPI service provider software and Intellect, a personal information manager (PIM) software application from Clearwave Communications. The TAPI-160 phone features oversized keys, a handsfree speakerphone, 160 character LCD, 6 "state-driven" soft keys and a serial port for plugging in the PC.



Norstar Advantages:

- Executone's TAPI phone requires an RS-232 port on the PC for connection. In the event that the PC's RS-232 ports are in use for a modem and a serial mouse, a RS-232 expansion card (ISA card) must be purchased and installed in the PC to allow connection of the TAPI Device. In addition to the Computer Telephony Adapters which require an RS-232 connection, Norstar offers the Computer Telephony Adapter 150i, a TAPI PCIB card, for implementation in situations where there are no RS-232 ports available. The PCIB card eliminates the need to purchase two pieces of hardware for TAPI connectivity and removes exposure to RS-232 signaling issues.
- TAPI compliancy on the Executone IDS requires the TAPI phone. Consequently, customers purchasing the IDS system and wishing to add CTI capabilities in the future must either replace the IDS station set on the desktop with the TAPI phone at the time of the CTI implementation or purchase the expensive TAPI phones now to avoid "throwing out" phone sets later. Norstar's Computer Telephony Adapters can be implemented with any Norstar M7000 series phone set. The customer's investment in phone sets is protected regardless of when the CTI implementation occurs.

Appendix A

VISIT Applications

The following is a cursory overview of the VISIT Voice and FastCall applications. For more detailed information, please call the contacts listed at the end of this section.

The name "VISIT" was coined from "visual interactive technology." VISIT provides a new way of working and collaborating over distance. It is the intelligent way of working together.

Product Overview of Visit Voice 4.0

The improved version of VISIT Voice for Windows will make phone management more convenient than ever, it is compatible with Windows 95 in addition to Windows 3.1x, and works on the Norstar phone systems in addition to the Meridian family of phone systems. Help the knowledge workers among your customers save time and reduce frustration with VISIT Voice 4.0.

Find a contact by name or by multiple categories, dial and answer calls with a click of your mouse, track phone use or just look to see who called while you were at lunch, and if you use a Meridian 1 or SL-100/DMS-100 phone system, visually interact with your Voice Mail using an "answering machine" style interface. With VISIT Voice 4.0 and a Nortel speaker phone, you truly have hands-free communication.

VISIT Voice is a visual interface to your telephone, with icons for specific activities such as answer/ disconnect, call transfer, and conferencing. It includes a basic personal information manager (PIM) format directory in which multiple phone and data numbers, address, company, title, and a memo for details can all be stored for easy retrieval. Dial with a click on any number in the directory. There is also a call log which can be used to track both incoming and outgoing calls and to return calls with a click on a logged phone number. Directory information can be imported or exported for ease of data entry. And the voice mail interface saves time and enhances use of voice mail by making a simple point-and-click interface instead of relying on strings of hand-entered touch tones.

VISIT Voice 4.0 will be offered as a single-user software package, and also as a variety of multiple-user site licenses that provide for from 10 to 500dm0+ users and provides significant per-seat savings. Connectivity hardware comes separately to provide for flexible ordering. TAPI service providers are included for the following setups:

SWITCH	PHONES	CONNECTIVITY H/W
Norstar	M7310, M7324, M7208	Computer Telephony Adapter 100

The minimum PC requirements depend on your choice of connectivity. The requirements for all the connectivity choices listed above are:

- 386 or faster PC
- Hard drive with 20MB space available, monitor, and mouse
- Free serial port
- 12MB RAM minimum; 16MB RAM recommended
- CD-ROM on board or access to another computer with CD-ROM ability

Switch requirements are simple. Just program the switch for normal digital communications.

Main Features

- **Directory**. The new directory structure conforms to the ODBC database standard thus providing all the features of a database application. It allows the user to define categories to assign directory entries thus providing the capability to easily filter your directory and see only the entries for a particular category. The new directory provides for recording addresses, various voice, data, and fax phone numbers, as well as a free form memo field for recording personal information.

- **Auto Memo Pop-Up**. Whenever memo information is attached to a directory entry, the memo can automatically pop up on the screen (an optional selection) whenever calling that person or receiving a call from that person. It's a quick reminder of what the call content should include. This capability works off the caller ID service available through your phone system.

- **Call Management**. Make and receive calls, transfer calls, etc., all through mouse and/or keyboard commands on the PC screen without ever having to touch your telephone.

- **Call Logs**. Access a visual display of all calls made and received. Call logs can be used to place return calls through on-screen commands. Accurate logging of incoming calls works off the caller ID service available through your phone system.

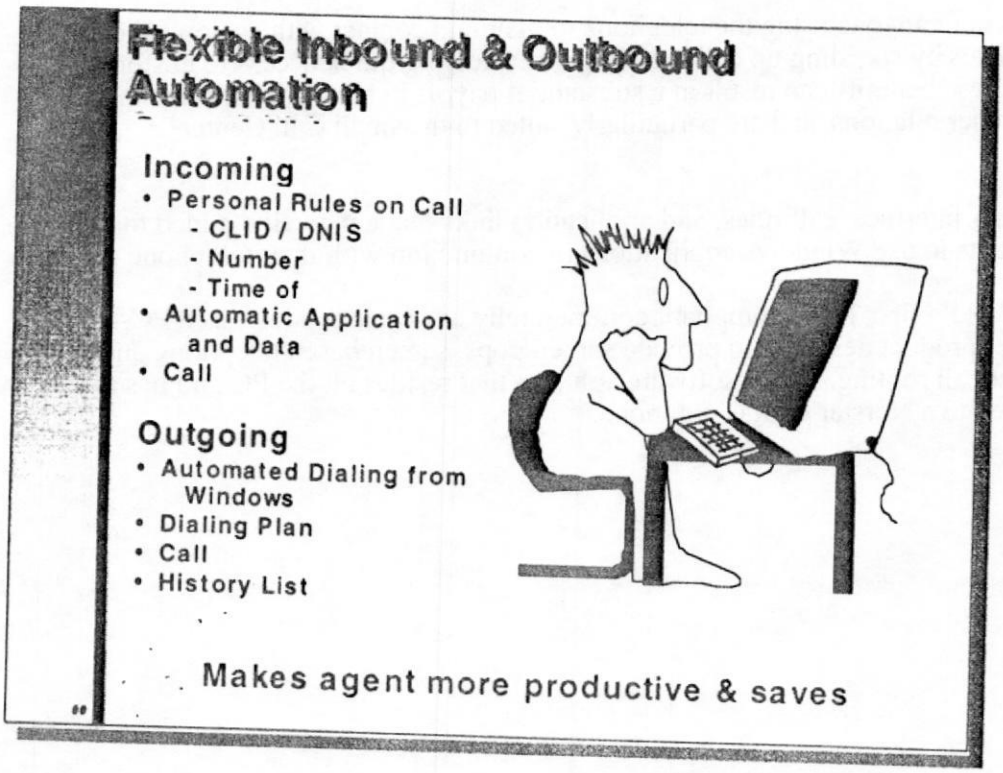
- **Dialing Plans**. Easily adapt office dialing plans to dialing plans for home, hotel, or other company locations without having to modify the directories.

Connectivity

VISIT Voice 4.0 utilizes the standard digital phone lines and cards in your Meridian 1, SL-100, DMS-100 or Norstar and caller ID information from your switch to support its range of telephony features. The connectivity between phone and PC is available in stand-alone, easy-to-install hardware for each platform and also in space-saving, internal hardware for most platforms. The full list of options is found in the *Product Overview* section of the main body of this bulletin.

Product Overview of FastCall

Another member of the portfolio of VISIT products is FastCall. FastCall is part of a family of PC-based multimedia communication applications developed for Nortel. FastCall is a Microsoft Windows based application that provides a CTI solution for a knowledge worker or an agent in an informal Call Center. FastCall features include preview dialing, screen based telephony functions and data screen pops. Incoming caller information initiates a predefined sequence that automatically brings up a customer record on the screen simultaneously with the incoming call, Fastcall can be implemented in minimal time and may not require any custom integration.



Ideal users of Fastcall

- Informal Call Centers
- Telemarketing Centers
- Sales Departments
- Service Centers
- Help Desks
- Collection Agencies

Features of Fastcall

- Easy Administration
- No Programming Skills Required
- No Custom Development Required
- Easy to Install
- Supports screen pops based on DNIS, ANI, Caller's input (using Meridian Mail pass-through feature), CLID
- Integration with Microsoft windows applications, Database and PIMs using DDE or Key Stroke Macros

For Incoming calls, FastCall takes the Calling Line ID and matches it to a database screen within the user's Windows database. It automatically "pops the screen" for the call center agent.

Incoming calls also can be call logs for tracking purposes. And, incoming calls can be "treated" and routed based on time of day, number called, etc. Outgoing calls can be dialed from any Windows application for a telemarketing service.

FastCall will benefit anyone using the telephone to maintain contact with customers or business associates by speeding up call handling and allowing quick access to customer information. These benefits can result in a substantial payoff in both productivity and improved customer relations, and are particularly suited to the small Call Center environment.

The FastCall user interface, call rules, and application links make it a value-added tool for anyone who wants to use Windows applications in conjunction with their telephone calls.

FastCall, the world's first TAPI compliant commercially available product, is a PC-based small call center product designed to provide screen pops, screen based telephony and some intelligent call routing. It is a software solution that resides on the PC and has a data device connected to a Norstar digital telephone.

Appendix B

Business Affiliate Program

The following is a cursory overview of the Business Affiliates Program. This Nortel organization will present a suite of third party applications, some of which will run on the TAPI/TSAPI Enabled Norstar Platform. For more detailed information, please call the contacts listed at the end of this section.

The NORTEL Business Affiliate Program is designed to provide technical and marketing support to companies who work closely with NORTEL customers and distributors in delivering Computer-Telephone Integrated (CTI) solutions. Affiliate companies include software application developers, value-added resellers of CTI applications, and system integrators that specialize in voice, video communications, and telephony application technologies, as well as organizations that want to develop private applications to work with NORTEL equipment. With all suppliers (computer manufacturer, telecommunications supplier, and application software developer) of an integrated computer-telephony solution working together, the customer receives a smooth implementation, prompt problem solving, and the best-in-class solution for their business needs.

Annual Developer Conference & CTI Forums

NORTEL holds an annual Business Affiliate Conference, along with specific CTI forums throughout the year. This allows NORTEL to address product and market direction and to gain insight from the various Affiliate companies. These conferences and forums are designed to be intensive exchanges of product ideas that NORTEL and its Affiliates can use in establishing future product and market plans. Affiliates can express their opinions on future development trends and can request changes to proposed product specifications. The Forums provide Affiliates with proprietary technical details of various NORTEL product evolution plans. Each Forum also allows review and discussion of all issues of common interest.

Technology Transfer Exchange Program

Affiliates participate in bi-directional technology transfer through a wide variety of sources. These sources include application forums, product conferences, mailings, telephone support and access to a dial-up/Internet technology server to obtain product information on DMS (central office CompuCALL), Meridian SL-100 (SCAI), Meridian 1 (M-LINK and M-IVR), Norstar (Norstar ACCESS), Network Applications Vehicle (NAV), Intel/Microsoft Telephony API (TAPI) and Novell Telephony Services API (TSAPI).

All Affiliates receive brochures, press releases, new product announcements, product documentation, and sales materials such as direct mailers and Product Bulletins.

Developer Training & Documentation

Product-specific sales and technical training courses and documentation, developed initially for distributors, are available in various formats, including Computer-Based Training. Depending on the NORTEL platform product the Affiliate is developing upon, there are further in-depth product courses developed by NORTEL that are held in various locations such as Richardson, Texas, Los Angeles or Sacramento, California, and Parsippany, New Jersey.

Application Marketing Support Program

Business Affiliates may use the NORTEL Business Affiliate symbol on their letterhead, business cards, and marketing materials, thereby sharing NORTEL's reputation of quality products.

Business Affiliates may have their products and services listed in the Meridian Solutions Database and CD which is disseminated to NORTEL distributors, sales and marketing support staffs, consultants and customers. This information is updated quarterly.

Business Affiliates receive specific product representation to NORTEL distribution channels and may be invited to bring their own materials and demonstrate their products in a NORTEL booth at major trade shows.

Business Affiliates can have Application Briefs produced and distributed, on their behalf, to NORTEL distributors, customers, and sales and marketing staffs. These Application Briefs are "success stories" which provide information to potential customers and describe successful implementations of Business Affiliate application products.

Compatibility Lab Testing Program

To assist Affiliates in the development of their applications, developer support resources are provided by NORTEL in Richardson, Texas. In addition to telephone support, NORTEL offers compatibility lab testing services. Various configurations of Meridian 1 and Norstar systems are available. M-Link, M-Mail, M-MAX, TAPI, TSAPI, and Meridian IVR are all available to developers for testing. For networking evaluation, the lab is connected to other NORTEL DMS and Meridian SL-100 switches. Lab access and assistance are available on a per day basis.

Product Delivery Program

Business Affiliates may purchase Meridian 1 systems and equipment upgrades through existing NORTEL distributors who may also provide installation and maintenance of the system.

Business Affiliate Program Participation Levels

Private Affiliate - This level provides an opportunity for organizations who choose to develop their own private CTI applications to directly participate with NORTEL, NORTEL distributors and Application developers. These Affiliates have access to the Annual Developer Conference, CTI Forums and the Technology Transfer Exchange Program.

Developer Affiliate - This level affords large and small software companies and private programmers developing custom applications an opportunity to participate in the Technology Exchange Program and the Developmental Support Program; these programs are not available to the public business community.

Premier Affiliate - These are Northern Telecom selected Affiliates with an application of particular strategic value to NORTEL. The Premier Business Affiliate enjoys an expanded relationship with NORTEL and is eligible to participate in the development of cooperative marketing plans with NORTEL and to receive expanded benefits not available to General Business Affiliates.

Business Affiliate Program Entry Requirements

Companies who work with NORTEL's application enablers and who meet the criteria of being an established non-competitor company can enroll as an Affiliate. To enroll in this

program, a company representative needs to complete an enrollment form, describing details of the company's products, marketing strategy, account profiles, and product support procedures. The enrollment form is submitted to the Business Affiliate Program management group at the Nashville office. The company's information will be reviewed and considered for a Private Affiliate or Developer Affiliate status. In reviewing the enrollment form, NORTEL looks for financial strength, strategic application value, excellent customer references, technological depth and geographic coverage that will complement NORTEL's product distribution channels. If some synergy shows their product could be strategic to NORTEL's success, NORTEL will propose to elevate the Affiliate to a Premier Affiliate status. This enhanced relationship enables the Affiliate to take advantage of the more comprehensive marketing programs provided by the Business Affiliate Program.

Appendix C

Nortel Partners Program

New Program Providing One-Stop Shopping for Select Third Party Applications:

Nortel has been successful in attracting almost 300 software developers and systems integrators to work with us through the Business Affiliate Program to develop applications which complements Nortel switching platforms. Nortel is now taking the relationship with a select few of those companies to the next level.

Through the Nortel Partners Program (NPP), Nortel is entering into marketing agreements with selected multimedia application developers. These agreements are much less complex than OEM supply agreements, while still allowing Nortel to sell NPP Products through established distribution channels.

Nortel carefully selects third-party products developed by members of the Business Affiliate Program and chooses those that provide features and capabilities for which Nortel believes are strategic to the marketplace. These products are tested in Nortel's labs to verify compatibility with Nortel switch platforms. Nortel works closely with the potential NPP vendor to ensure their processes and support services are adequate to meet the needs of Nortel's distributors. When these product compatibility and support requirements are satisfied, the product is accepted as a Nortel Partners Product.

Nortel is currently in negotiations with several companies with products and solutions in the following areas:

- Desktop CTI
- Call Center
- IVR
- Mobility/Telecommuting
- Vertical Markets

As agreements are signed, we will issue detailed Sales & Marketing Bulletins on each product, followed by product marketing collateral and other sales aids. If desired, detailed Distributor sales training on NPP products can be scheduled directly with each NPP vendor. We expect to announce the first NPP Products in February 1997.

The Nortel Partners Program is a win-win situation for all parties involved:

- Nortel **gains** ... a broader product portfolio, leverage of core products and ability to offer total solutions.

- **Nortel distributors gain ...** a broader portfolio, new revenue opportunities, and the ability to order products from Nortel, using established purchasing processes, rather than qualifying new vendors and creating new relationships.

- **Nortel Partners Program vendors gain ...** increased market exposure and sales.

- **End-users gain ...** the ability to do one-stop shopping with their Nortel distributor, with the knowledge that the application will work on their Nortel switch.

In addition, Nortel negotiates with selected multimedia application developers to provide a variety of marketing support services. For the distributor, this means that Nortel markets the products and creates a pull-through demand, thus making the sale a little easier. And, the Nortel Partners Program staff provides pre-sales support needed to pull the deal together.

Program Operation

The intent of the Nortel Partners Program is to provide a broader portfolio of computer telephony applications to Nortel customers. Some of these applications may even make the difference in a sale, by offering exactly the functionality the customer needs. Because Nortel Partner Products are supplied by third-party vendors, there are operational considerations of which Nortel marketing personnel and distributors should be aware. They include:

- Products are tested and verified in a Nortel lab for compatibility with specified Nortel switching platforms.
- Responsibility for product warranty, liability and technical support remains with the Nortel Partners Program vendor.
- The Nortel Partners Program vendor's standard software license agreement will be in affect.
- If there is a question as to the source of a problem (switch or application), Nortel's ETAS will provide "triage" technical support, i.e., first point of contact for Nortel Distributors, to rule-out switch problems. Technical support for the Nortel Partners Product will be provided by the Nortel Partners Program vendor.
- Nortel Partners Products are shipped FOB the NPP vendor's warehouse. Shipping and returns are handled by the NPP vendor.
- Notice of product changes or discontinuance from the NPP vendor must meet a strict Nortel timetable.
- Nortel will accept orders for Nortel Partners Products. All pre-sales support is provided by the Nortel Partners Program Help Desk at (615) 734-4995. After answering pre-sales questions, the Nortel Partners Program Help Desk will transfer the caller to the appropriate inside sales representative to place an order. If pre-sales support is not required, distributors may call and submit orders directly to their inside sales representative.
- A special catalog of Nortel Partners Products will be produced for Nortel and distributor use.
- Each Nortel Partners Product is contracted for availability on a country-by-country basis.

NORTEL CONTACTS

If you have any additional questions or comments, or require additional information, please contact the CALA Team:

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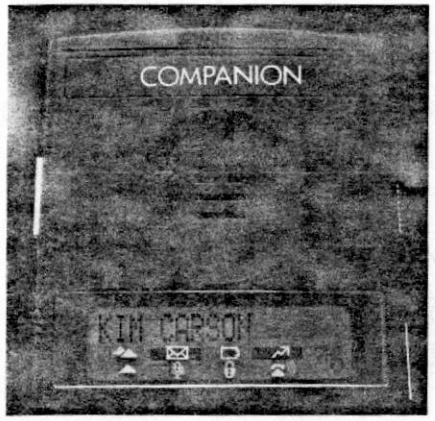
Tel. (954) 851-8064
Fax (954) 851-8300

NORTEL

COMPANION C3020
Portable Telephone



The COMPANION C3020 Portable Telephone supports a wide range of time-saving and convenient features such as:

- Calling Party Name Display (CPND)
- Call Line Identification (CLID)
- Visual Message Waiting Indicator (VMWI)
- Call Transfer
- Call forward
- Conferencing

Digital performance means the C3020 provides superior voice quality, with no interference or eavesdropping.

To deter unauthorized use, people can lock their portable telephones with their own password.

Low Power consumption means the C3020 has long battery life and will easily make it through a normal working day before requiring recharging.

Design Summary

Display
- 2 line Liquid Crystal Display (LCD) with status icons

Power Source
- 3 AAA batteries (alkaline or rechargeable nickel cadmium)
- Optional recharger with rechargeable nickel cadmium battery pack (1-2 hour charging time)

Power Consumption
- Alkaline: 13 hours talk time, 200 hours standby time
- Nickel cadmium: 4 hours talk time, 60 hours standby time

Weight
- 170 grams

CLID/CPND/VMWI Prerequisites:
- Meridian COMPANION with Meridian 1 Release 20 Software
- Software package #240, package #95 also required for CPND
- C200 behind Centrex with CMS service

Dimensions
- 14.5 x 6.3 x 2.2 cm

Color
- Black

Operating Temperature
- 0°C to 40°C

Radio Protocol
- CT2Plus Class 2 Standard
- 944 MHz-948.5 MHz (944 MHz-952 MHz capable) Dedicated frequency for Personal Communications
- 40 voice channels (72 voice channel capable)
- Time Division Duplex (TDD)
- 100 kHz channel spacing
- 32 kbits/sec Adaptive Differential Pulse Code Modulation (ADPCM) speech coding
- Dynamic Channel Selection
- Radio Frequency (RF) Output Power – 10 mW Effective Radiated Power (ERP) maximum

In Canada:
Northern Telecom
2920 Matheson Boulevard East
Mississauga, Ontario L4W 4M7

Telephone: **1-800-4NORTEL (466-7835)**

In the U.S.:
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2221 Lakeside Boulevard
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Telephone: **1-800-4NORTEL (466-7835)**

In the Caribbean and Latin America:
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Mexico (525) 325-2100
Brazil 817-2911

Ordering Number: P0741155 Issue 05
April 1995

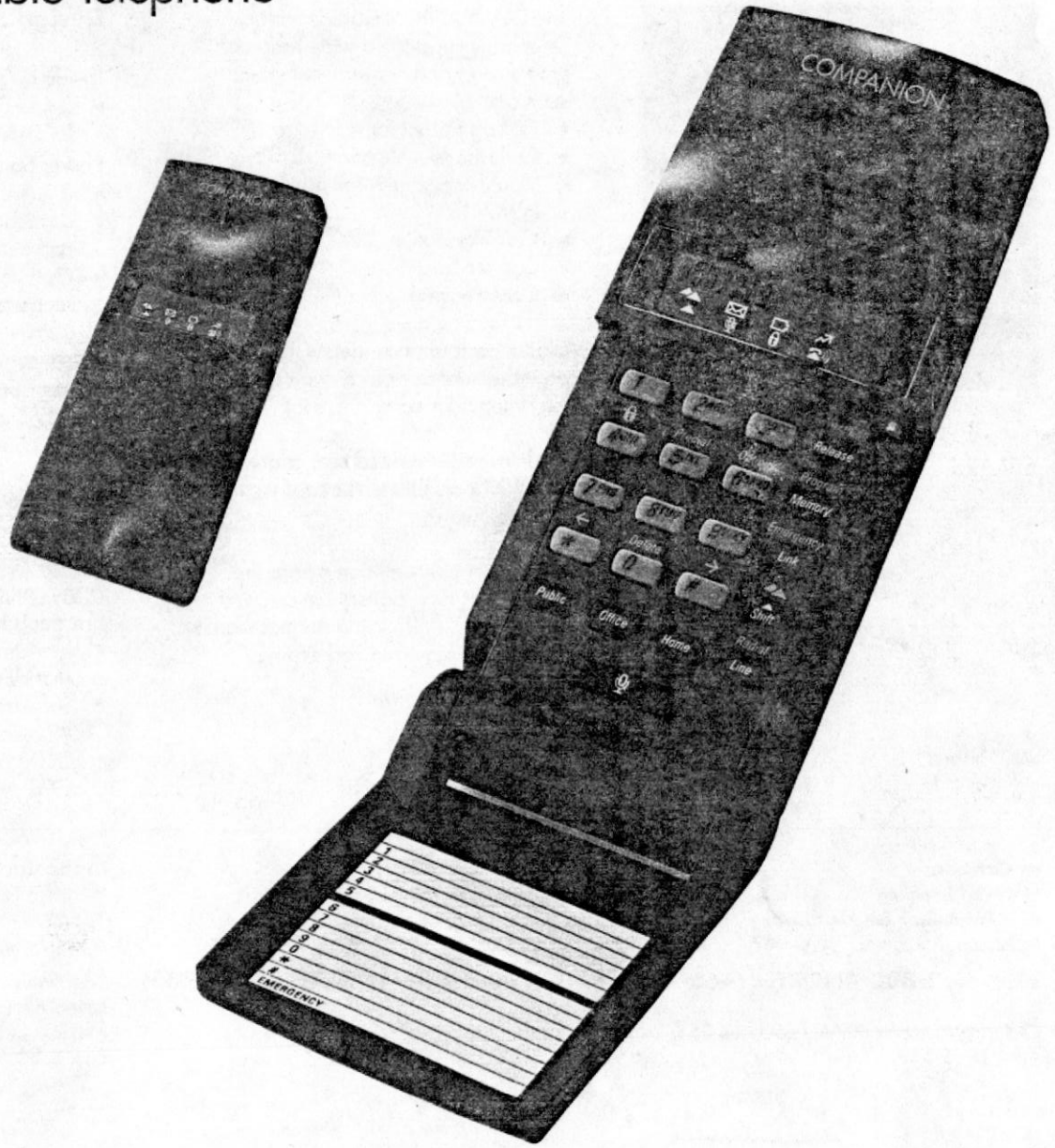
COMPANION C3020 Portable Telephone

The COMPANION C3020 is a compact, portable telephone that can be opened with the push of one button.

When used with the COMPANION Wireless Business Communications System in a building, it enables people to make and receive calls anywhere on the premises.

Function keys provide quick access to features and the large two-line alphanumeric display shows the name and the number of the person or company calling when system is working with Meridian COMPANION or the C200 behind Centrex is used.

The C3020 Portable Telephone can have its own number. Or, it can share the same telephone number with a desk telephone, so that when a call comes in, both phones will ring. People can start a conversation on one phone and easily switch to the other.



norstar

NORTEL
NORTHERN TELECOM

Sales and Marketing Bulletin

Number: CALA-151-MB
Date: December 1997

NORSTAR Distribution List

In a continuing effort to improve our communication channels between NorTel and the CALA region, the Norstar distribution list has been modified effective January 1, 1998.

The Norstar distribution list is made up of key individuals from each organization, which will be responsible for the distribution of information received from NorTel CALA, to their organization. Information such as new product introductions, promotional marketing programs, and compatibility issues, etc ... will be introduced in the region through the distribution list.

As of January 1, 1998, the Norstar CALA distribution list will be made up of three key individuals from each distributor/telco. Your Channel Managers have selected three representatives in your organization to receive all Norstar information, and in turn, they will distribute this information to the appropriate people.

If you wish to continue receiving the Norstar bulletins, contact your Channel Manager. Please keep in mind that if you are not on the distribution list as of January 1, 1998, you will not receive any additional Norstar bulletins until you have been added.

If you have any questions, comments, or require further information, please contact the Norstar CALA team:

Edwin S

norstar

NORTEL
NORTHERN TELECOM

Sales and Marketing Bulletin

Number: CALA-150-MB
Date: December 1997

NORSTAR BRANDING

Nortel CALA is pleased to announce 'NORSTAR' brand implementation. The 'NORSTAR' brand will bring Norstar visibility and name recognition to the marketplace and help to 'Build the Brand.' Nortel will begin manufacturing the new 'NORSTAR' brand telephone sets January 5, 1998.

Branding Overview

On the telephone sets, the tampo printed brandline 'NORSTAR' will replace the existing Meridian brandline. An embossed 'NORTEL NORTHERN TELECOM ' signature will replace the existing 'NT Northern Telecom' signature that exists above the telephone feature card under the handset as well as on the base of the telephone sets.

The Corporate standard brandline colour of Pantone Cool Grey 10c will remain on all Norstar Chameleon and Dolphin Grey sets and Corporate standard white ink tampo printing will be used on all Norstar Black and Red sets.

Norstar KSU's, Peripherals, Expansion Modules and Applications will also undergo a change to the new 'NORSTAR' brandline and Corporate Signature.

There will be no change to existing CPC codes for Norstar telephone sets, Norstar KSU's, Peripherals, Expansion Modules, Applications and Documentation that undergo the 'NORSTAR' branding change.

Customer shipments will experience a minimal mix of product until existing inventories are depleted.

Phasing of Changes

The change to 'NORSTAR' branding will occur in two phases.

PHASE I:

Phase I incorporates all Norstar telephone sets which include the plastics, documentation, components and packaging. This will begin with Norstar telephone sets which Nortel will start to manufacture on January 5, 1998.

PHASE II:

Phase II incorporates all Norstar KSU's, Peripherals, expansion Modules and Applications. The rate at which branding changes will occur will be a gradual process relevant to inventory depletion.

If you have any questions or comments, or require further information, please contact the Norstar CALA team:

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NORTEL
A World of Networks

Product Bulletin

Number: CALA-092-PB

Date: February 1998

Venture

Multi-line Communications System – Your Private Network

Nortel CALA Inc., is pleased to announce the introduction of Venture. This is a KSU-less system that covers the gap between the Norstar 3X8 and the single line analog telephone. This analog system works independently or as a small system with no installation required ("plug and play"). Venture has capacity for 3 lines and 8 extensions including telephones and the Enhanced Feature Adapter.

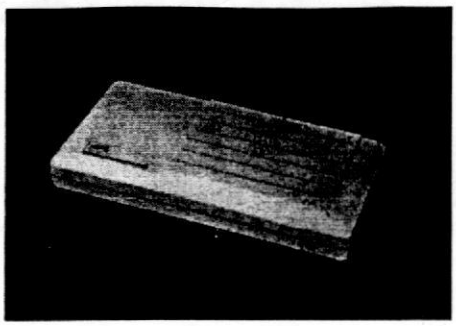
Venture offers integrated Caller ID and Call Waiting Display right on the telephone. This Multi-line telephone system is a network-based, service-ready, that's perfect for your upscale, technology-oriented customer: residential, small business or home office, who needs the efficiency of a large system.

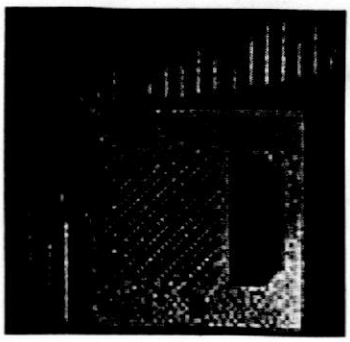
Venture's portfolio consists of four components:

1. Venture Three-Line Telephone (available now)

2. Venture Three-Line Telephone with Answering Device (available 2nd Quarter 1998)

3. Venture Enhanced Feature Adapter (EFA, available now)
4. Doorphone (Available now)





The EFA is an external adapter module that connects to the Venture telephone system and adds value to functions usually found on more expensive PBX and key systems such as:

- Music on hold and background music interface
- Door phone capabilities
- Fax machine connection
- Call detail recording and printing
- Overhead paging

Pricing Information

Attached you will find pricing and ordering information for Venture.

For more product information on the Venture's Portfolio including presentation material, please contact: Lisbeth Matheus, Marketing, Network Products at (954) 851-8445.

norstar

NORTEL
NORTHERN TELECOM

Sales and Marketing Bulletin

Number: CALA-143-MB
Date: December 1997

NORSTAR MINUET ACD

Nortel CALA is pleased to announced the availability of the new Norstar MINUET ACD. MINUET ACD will be available in CALA starting January 1, 1998. This application is an entry level ACD for the small formal/informal call center with up to 10 active agents and 2 agent groups. MINUET offers an integrated solution to small businesses and departments seeking for a way to provide better customer service while increasing their revenue opportunities and reducing their operational costs.

Norstar MINUET ACD provides small business and departments with a cost effective tool to manage and organize how calls are distributed within an organization. Call centers are growing drastically, specially in the low end of the spectrum (less than 20 agents). The two major factors that have triggered the need for small call centers are:

- The new industry trends to move away from the large single-site call centers toward the more diversified/decentralized regionally based centers.
- the tremendous pressure placed on business of all kinds to provide state of the art customers services.

Norstar MINUET ACD is a call center application that provides the Norstar Key System Unit with:

- Up to 10 active agents
- 2 agent groups
- Up to 15 assigned lines
- Set based reporting
- 6 prerecorded announcements
- Large numbers of additional features described in detail in the enclosed Channel Introduction Package (CHIP)

The Norstar MINUET ACD will help business' increase their revenues by: expanding market coverage, extending sales hours, and educating customers on new product offers. Additionally, it will reduce costs by: shortening customer hold time on collect calls and

NORTEL
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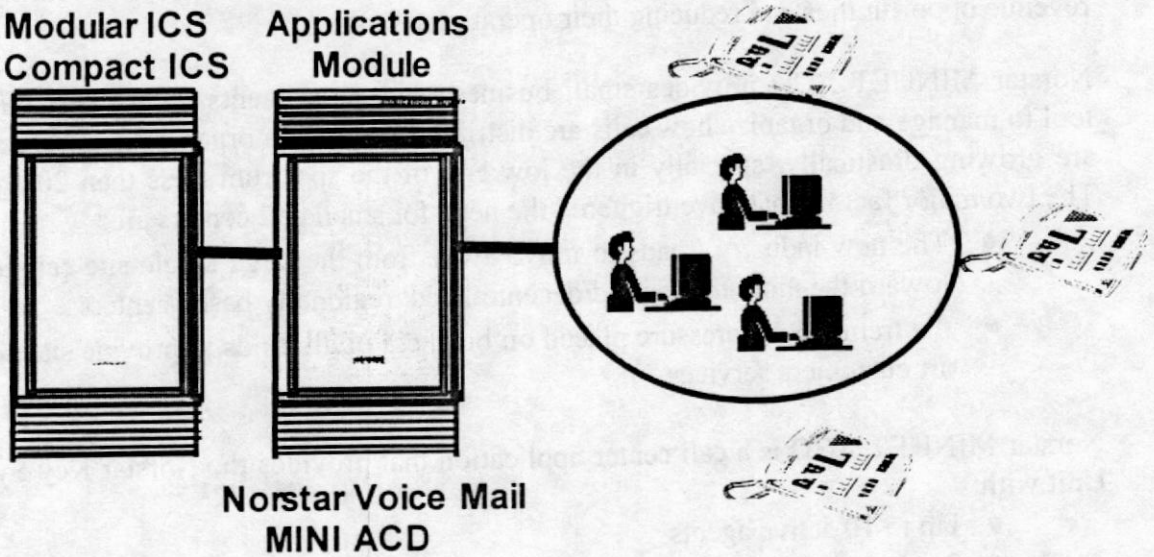
Norstar MINUET ACD

Channel Introduction Package



January 1998

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reducing employee turnover. Ultimately, Norstar MINUET ACD will increase customer satisfaction and employee morale.

For further details about MINUET ACD please consult your CHIP document, which fully describes the following topics: market positioning, product features, compatibility, components, competition, installation and maintenance, and product specifications.

Below is the ordering code necessary to obtain Norstar MINUET ACD (effective January 1, 1998):

CPC CODE	ENG CODE	DESCRIPTION
A0666054	**NTAB2043**	**Norstar-PLUS MINUET ACD Eng**
A0666055	**NTAB2044**	**Norstar-PLUS MINUET ACD Fre**

For pricing information please consult your CALA price book, or contact one of the members of the Norstar CALA team.

If you have any questions or comments, or require further information, please contact the Norstar CALA team:

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Norstar MINUET ACD
Channel Introduction Package

1.0 Introduction

Norstar MINUET ACD is a software application designed to run in a multiple application environment on the Norstar Applications Module. Other applications for the Applications Module include Norstar Voice Mail 3.0, Dial-by-Name and Norstar Interactive Voice Response. MINUET provides entry level Automatic Call Distribution (ACD) functionality and focuses on call routing capabilities. The product, which includes a software diskette, documentation and a Norstar Voice Mail 3.0 upgrade Key Code, is available directly from Northern Telecom. Nortel CALA is providing sales and marketing expertise for a coordinated, cohesive product offering to the customer.

Norstar MINUET ACD is an entry level ACD for the small formal or informal call center with up to 10 active agents and 2 agent groups. MINUET provides small businesses and departments with a cost effective tool to manage and organize how calls are distributed within an organization.

This Channel Introduction Package is designed to assist with information for the standardization of Norstar MINUET ACD. It provides an overview of the product and includes all information required to introduce the product.

The Channel Introduction Package answers the following questions:

- **Product Positioning** - How is the product positioned in the marketplace?
- **Description** - What is the product? What features does it have?
- **Documentation** - What documentation comes with Norstar MINUET ACD?
- **Training** - What type of technical training and sales training is available?

2.0 Market Positioning

2.1 Market Need

Norstar MINUET ACD provides businesses with an affordable call center solution for improving customer service and building their business through incoming telephone calls.

The telephone is increasingly an invaluable resource. More and more companies are turning to the telephone as an excellent way to not only market their products and services, but to provide new services and customer service as well. The high cost of a person to person sales call and the increased variety of products and services available by telephone have resulted in small call center's developing in many businesses.

A small call center is a business unit that has one or more individuals (or agents) who use the telephone to conduct specific transactions with calling customers. In fact, it is often the very first point of contact that customers have with an organization. A small call center, in some form, can be found in almost every business. Call centers help companies take advantage of this effective, personal way of doing business and managing operations more efficiently. The more emphasis

the company has on customer service and customer satisfaction, the greater the need for call center functionality.

Industry statistics show that:
- o 88 percent of business callers hang up if put on hold
- o 85 percent of those callers will remain on hold if reassured by music and/or recorded announcements
- o 34 percent of callers will inquire about a new product or service advertised via a recorded announcement

Source: Phone Power

The ACD component of a call center assists companies in managing incoming calls and allows more calls to be processed by the same number of individuals or agents. Informational announcements that are played to callers on hold can be used to encourage them to continue to hold or can be used to promote products and services. Industry studies show that increases in agent productivity can range from 20-40%.

Small Call Center Market

The small to mid sized call center market is expected to grow faster than any other call center segment, fueled by departmental and branch office call centers, as well as, a surge in small businesses. Companies in a wide variety of manufacturing and services industries recognize excellent customer service is a strategic weapon to differentiate their firms from competitors and gain market share. Customers form lasting opinions about overall quality and responsiveness during the initial moments of contact.

Projections for the small call center market in the United States over the next four years are:

1 to 20 Agent ACD System Sales

1996	1997	1998	1999	2000	CAGR
6,949	8,577	10,472	13,210	16,678	24.5%

- Source: Dataquest U.S. Inbound Call Centers Market Share and Forecast, July 1996

In Canada, 1995 market results published by NBI/Michael Sone Associates indicated that 63% of total ACD system sales (462 units) were to the under 20 agent segment of the market.

Consulting firms such as Dataquest, NBI/Michael Sone, and Frost and Sullivan Inc. are recognizing a trend for businesses to move away from "mega centers" and toward smaller departmental, branch office or work group call centers. While the under 20 agent call center previously defined a "small" call center, the market is further segmenting and defining a "very small" call center as under 10 agents. This trend toward "very small" call centers is further illustrated by a study by The PELORUS Group which estimates that 30% of all call centers have less than 10 agents. The PELORUS Group further quantifies the opportunity in the "very small" call center market by looking at a number of industry segments.

Percentage of Call Centers within Industry Segment Having Fewer than 10 Agents

Industry	Percentage
Manufacturing	44.6%
Telecom / Transportation / Utilities	11.3%
Wholesale / Retail	27.5%
Finance / Banking / Insurance / Real Estate	26.9%
Communications / Publishing / Software	22.6%
Education / Health Care	44.4%
Other Professional Services	15.6%
Government	61.3%

- Source: The PELORUS Group Call Center Survey, December 1996

Customers using these very small call centers insist on the same quality treatment they receive from the larger center. So, not only is there a need for small call center products, but these products must have the flexibility, enhanced queuing and efficient call handling capabilities of the larger systems.

2.2 Target Markets

Wherever there is one or several people answering similar kinds of telephone calls - at an order desk or reservations office, in a customer service department or technical support center - there is an opportunity to implement a call center.

Formal Call Centers

Norstar MINUET ACD has been designed to provide a balance between ease of use and flexibility for small call centers. Prospects include both formal call centers as well as informal call centers. A formal call center is where a company will dedicate several people to answer similar kinds of telephone calls. The individuals, or agents within the formal call center specialize in answering incoming calls and concentrate on that activity. A formal call center is one in which the flow of incoming calls is managed to achieve successful customer interaction while maximizing a company's return on investment in equipment and personnel. The management of expense is almost as important as managing service.

Informal Call Centers

Informal call centers, which are fueling much of the small call center growth, also have several people answering similar kinds of calls. These individuals, however, may or may not be dedicated to answering incoming calls. They are often knowledge workers who act as part time agents while performing other duties within the business. Prospects for informal call centers are more difficult to identify as the person answering the call is usually not identified as an "agent" or a "telephone service representative." They could be the in-house expert in a particular department that takes calls from specific customers or during specific times of the day in addition to performing other duties. Typically, an informal call center involves using call center capabilities to provide an enhanced form of customer satisfaction or revenue achievement by making the best qualified persons available by phone.

Installed Base of Norstar Systems

The advent of departmental and work group call center applications and the introduction of Norstar MINUET ACD create an excellent opportunity for vendors within their installed base of Norstar and Norstar PLUS systems and Norstar Voice Mail systems. MINUET provides distributors with the opportunity to return to their installed base customers, identify call center applications and economically upgrade systems with a high value application.

Existing Norstar Voice Mail customers simply require the MINUET software package and 16 MB of RAM on their Norstar Applications Module to implement a call center solution. Norstar key system users requiring call center functionality present distributors with the opportunity to implement both Norstar Voice Mail and MINUET in their installed base. This enhances the level of service provided to customers and increases distributor revenue opportunities. (see compatibility section)

2.2.1 Market Benefits

Whether you have a formal or informal call center within a new or existing customer, target markets for Norstar MINUET ACD are businesses who would like to:

- Improve customer service
- Reduce abandoned calls
- Answer more calls with the same number of people and increase revenue
- Answer calls on a first-in, first out basis
- Reduce long ringing times and reduce hold times for customer
- Encourage callers to stay on hold with recorded announcements
- Advertise products and services to callers on hold
- Lower 800/888 costs due to shorter holding times
- Increase agent productivity and morale

2.3 Market Applications

Norstar MINUET ACD addresses a number of small formal and informal call center applications in a variety of industries. Remember that in many small businesses and work group call center applications, the agent group may be a group of only one person. Also, while many businesses may not identify the people answering calls as agents or may not have formal departments or groups assigned to this task, they will have a person or persons who respond to specific types of calls or questions. Some example applications where MINUET can be positioned and implemented are outlined below.

Order / Sales Desks

Companies which receive customer orders via telephone and have specific persons assigned to taking these orders are candidates for MINUET's efficient call handling capabilities.

Scheduling Centers

Examples would include doctors' offices, dentists' offices, golf courses and auto repair centers. Wherever a person or persons answer incoming calls and schedule appointments, MINUET can be implemented to eliminate ring busy, provide better customer service and reduce customer hang ups.

Customer Service, Help Lines or Inquiry Desks

With today's emphasis on quality customer service, businesses of all types and sizes are providing customer service, product help and question and answer lines for their customers. Manufacturers, software developers, auto parts counters, hardware stores and insurance companies are just a few examples where such services exist.

Reception Desks

Receptionists are tasked with answering and dispatching a business' incoming phone calls. Many receptionists are overwhelmed with calls during all or parts of the day. The enhanced call queuing capabilities of MINUET ensure that all calls are answered in a timely, efficient manner, eliminating ring no answer scenarios and reducing customer hang ups. MINUET is a cost effective back-up receptionist that also encourages callers to continue to hold by playing announcements.

2.4 Intelligent Integration

Norstar MINUET ACD is designed to be integrated with Norstar systems. The integration features include:

- MINUET is programmed using a Norstar station set with 2-line display.
- MINUET uses the Norstar displays to walk users through using features when it is appropriate to do so. For example, if an agent presses the "Unavailable" key before logging in, a message will instruct the agent to login first. The functions of the soft keys will also change by activity, bringing up functions when it is appropriate to do so and thus "teaching" the agent how to use the system.
- The Norstar display is also used to show system information and messages such as the group the call is for and the amount of time the person has been waiting.
- "Indicator" keys on Norstar sets are used to communicate information. For example, when calls are in queue, an indicator next to the "Login" key on the agent's set will flash. As the number of calls in queue increases, the indicator flashes to highlight urgency.
- Agents can login from any Norstar station set.
- Station sets do not become dedicated to ACD when an agent logs in: each station set is still fully functional. For example, an logged in agent can still make an intercom call. In addition, standard Norstar 7208, 7310 and 7324 telephones are used for agent positions.
- MINUET can share physical voice ports with other applications such as voice mail to play announcements to callers.
- Calls can be transferred between Norstar Voice Mail and Norstar MINUET ACD.

2.5 ACD Portfolio Positioning

There is a fundamental set of benefits sought by all call center users that include:

- Improved customer service
- Fewer abandoned calls

- Increased revenues
- Increased staff productivity
- Lower 800 number charges
- Improved office environment

While all users share these objectives, customers differ in both their call center capacities and in their reason for using an ACD. Two of the primary uses of an ACD are Call Queuing and Call Center Management. Call Queuing provides an organized way to distribute calls to one or more groups of personnel. Call Center Management is accomplished by using call and agent reports to evaluate the performance of the center and to identify areas for improved productivity and effectiveness.

While all ACD users require Call Queuing, whether simple or advanced, users can be differentiated by their call center size and Call Center Management.

Norstar MINUET ACD

MINUET is a cost effective, entry level ACD product for the very small formal and informal call center. MINUET is an easily configured and easily maintained software application for the Norstar Applications Module and is designed to run in a multiple application environment. MINUET features include:

- Up to 10 active agents
- Up to 2 ACD agent groups
- Up to 15 assigned lines
- Station set-based system administration
- Set-based statistics
- Longest idle and top down routing
- Overflow

Users of MINUET require more enhanced queuing and routing capabilities than hunt groups or Uniform Call Distribution (UCD) can provide but with minimal statistical reporting.

2.5 Norstar MINUET ACD Product Features

Capacities	
Initial Installed Voice Channels	4
Maximum Installed Voice Channels	4 (note 1)
Simultaneous Announcements (Note: subtract # of channels reserved for Agent Record)	4
Recorded Announcements	6
Configured Agents	20
Logged In Agents	10
Groups	2
Groups Simultaneously Logged Into	2
Lines	15
Routing Tables per Group	2
Steps in Routing Table	*6 day*, 2 ngt
Overflow Levels	1
Voice Mail Transfer Steps	4
Station Set or Screen-based Programming	Stn. Set
Reports	
Set-based Statistics	(note 3)
Optional Feature Pack	(note 4)
2500 Set Agent Support	(note 4)

Agent Selection - Top Down	(note 4)
Delayed Answer (Routing Command)	(note 4)
Option	
Wallboard Software Support	(note 5)

Note 1: Physical voice channels are provided by the Norstar Applications Module and are used/shared with other applications such as Norstar Voice Mail 3.0 and Norstar Interactive Voice Response.
Note 2: Equal to the number of installed voice channels minus the number of channels reserved for "Agent Record".
Note 3: MINUET does not support printed reports, however, statistics are displayed on the station set LCD for a rolling 21 periods of time. Switching between Day and Night routing determines a statistical period's beginning and end. At any time users can look at the categories for each of the prior 21 periods. Statistical categories include: number of calls answered, number of calls abandoned, number of calls disconnected, average time to answer, average time to abandon and number of calls per category code.
Note 4: Norstar MINUET ACD does not have an optional feature pack. Features in this list noted with "Yes" for MINUET are included as standard features on the system.
Note 5: Wallboard Software support is a standard feature on MINUET 's core software.

2.6 Norstar Call Center End User Values

Norstar MINUET ACD provides small businesses, branch offices and departments with an effective tool to manage and organize how calls are distributed. This leads to increased customer satisfaction, increased staff productivity, lower 800 number charges, increased revenue, and an improved office environment. The following sections outline how these advantages can be positioned to potential Norstar Call Center customers.

2.6.1 Raise Revenues

Are revenues brought in by incoming calls? If so, what is the average value of each call?

Does the business suffer financially from having callers wait too long before being connected to a company representative?

Do staff return service calls from customers who wait too long on hold? How much do "call backs" impact the bottom line?

Norstar Call Center products increase revenue by:

- Increasing the number of calls handled
- Reducing customer hold time
- Eliminating ring/no answer
- Reducing abandoned calls

Expand Market Coverage

Where formerly it was too expensive to cover certain regions with a direct sales or service organizations, a call center will enable companies to exploit new market opportunities by increasing their geographical coverage. Even on a local level, if the "80 /20 rule" applies, a call center will help service those marginal accounts. That is, as with most organizations, 80% of revenues come from 20% of customers. The remaining four out of five customers are good candidates for call center sales and service efforts. Now companies will have the opportunity to turn those marginal accounts into major customers.

Upsell Account Base

Telephone service representatives (TSRs) can also help companies leverage current orders. TSRs can be trained in the area of cross-selling complementary products, such as supplies and accessories, upselling to larger volumes or higher value items, add on selling of products that are unrelated to the original order such as a monthly special, and substitute selling to minimize back order situations.

Extend Sales Hours

The call center can also convert lost revenue opportunities into hard sales. If the customer doesn't know where to buy a product, or know how to get to a store location, or can't reach a business outside of normal business hours, chances are the company won't get the order. A "ready to buy" situation has fizzled out. A call center can cost-efficiently offer extended hours, while providing expanded customer service and increased revenues.

Educate Customers

The call center can also be a forum for customer "education". Establishing a product information line, or playing pre-recorded product messages while the call is in queue, can increase the callers' knowledge and awareness of available products. A customer who is knowledgeable about a company's offering is one who will be confident in purchasing that product or service. That same customer will be less likely to buy competitors' goods even though he/she may have been tempted initially by more attractive packaging, a slightly lower price, or because the dealer's sales person prefer selling the competition's product.

Finally, simply showcasing the call center can be instrumental in realizing revenue opportunities. Just as the salesperson would take the customer from the showroom to the service center to demonstrate the facilities that are in place to support them after the purchase, a call center can demonstrate the company's commitment to customer service excellence.

2.6.2 Reduce Costs

Operating Costs

Norstar MINUET ACD can reduce, or contain, certain operating costs. A call center distributes calls more efficiently, thereby improving agent productivity by as much as 20 to 40%. Now, a smaller staff can do the same amount of work. Alternatively, the existing number of people can easily handle a larger volume of calls or deliver additional services, providing cost-efficient growth.

When used in conjunction with Norstar Voice Mail, call centers can gain additional savings by allowing customers the option of leaving a message instead of waiting in queue. Leaving a message takes a percentage of callers out of the queue and shortens the hold time for those who wait. This also enables the agent group to balance their work load by returning the call when they are available.

Reduce Labor costs by:

- Minimizing/eliminating receptionist call handling
- Increasing agent satisfaction
- Reducing agent absenteeism and turnover

More efficient call allocation also translates into reduced long distance charges. Toll costs can be cut by at least 10% since phone lines are better managed with the Automatic Call Distribution (ACD) system.

Reduce Trunk costs by:

- o Shortening customer hold time on 800/888 lines
- o Reducing the number of returned calls to customers
- o Saving time routing calls

Warranty / Service Calls

A study conducted by the Technical Assistance Research Programs (TARP), a Washington, D.C. based consulting firm, found that one third of product problems are caused either by customer misuse or unrealistic expectations. While a returned product may be found to be fault-free incurring no repair costs, telephone support can bring down these expensive costs.

Reduce Sales Costs

The cost of acquiring a new customer is about five times greater than the cost of keeping an existing one. More and more companies include a customer service objective as one of their strategic thrusts. The call center should be viewed as the strategic business unit that will help manage customer service objectives and commitment to meet customers' growing expectations. It will help increase sales and improve customer goodwill by making companies more accessible to their customers and prospects.

On average it may take as many as 5.5 field sales calls to close a sale. This is because several prospecting and information meetings may take place before the actual order is signed. Further, there will be those sales calls that never generate a sale. When the fact that a person-to-person sales call now costs close to $300 per visit is added into the picture, it is easy to see why a field sales operation is such an expensive proposition. Supporting field sales with less expensive inside sales support through a call center can bring down the cost of a field sales organization.

Soft Dollar Savings

Other intangible savings may be realized by implementing a call center include:

- o Improve customer service
- o Build customer loyalty
- • Decrease customer complaints

2.6.3 Customer Service

Is the business, or a segment of the business (e.g. department or branch office) receiving a large or growing number of incoming calls? Are these call related to customer service and order taking, or any other mission critical activity?

Who answers the majority of the incoming calls? Are employees multi-task trained and therefore able to answer more than one type of call? Are they considered specialists?

Customer Reach

Does the business support 800/888 number lines? If so, what percentage of calls come in on these lines?

How long does the average 800/888 number call wait on hold before being serviced?

One way for companies to reach customers or prospects is to make it easy for the prospects to reach them. Telephones are the service and purchasing tools of the 1990s and beyond. Toll free 800 numbers, viewed as a novelty and a privilege just a few short years ago, are now a routine customer expectation. For the smaller enterprise they provide the credibility generally associated with larger businesses. The growth and popularity of 800 numbers reflects the growth of incoming call centers across a wide variety of industries.

Several reasons explain the surge in conducting business by telephone. In a service based economy, many customers view the telephone as the ultimate in convenience. In addition, an aging less mobile segment of the population is increasingly dependent on in-home shopping and services. The Norstar MINUET ACD system provides solutions.

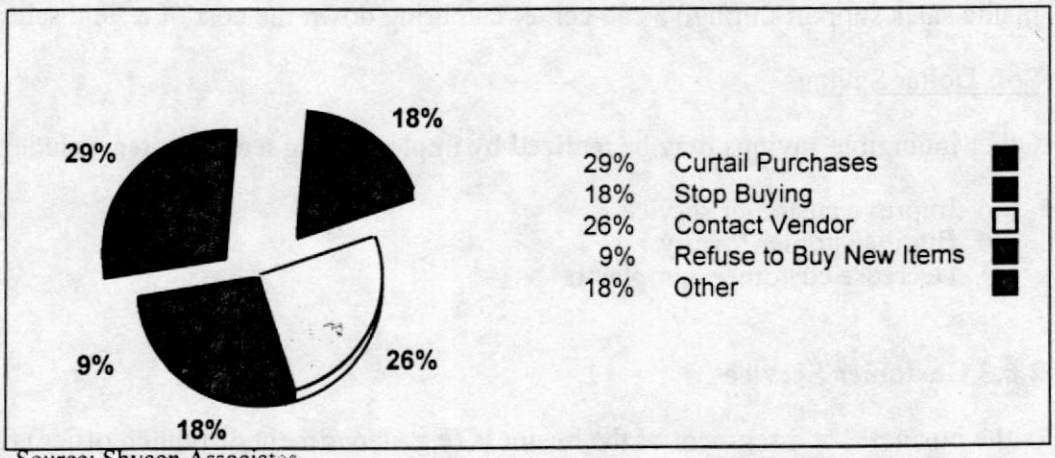
Handling Customer Complaints

Do customers complain about excessive hold times? Ring no answer? Constant transfers?

Many companies are using call center products to assure successful interaction with customers. "Customer service" is the watchword of the '90s. If the service level does not meet - or beat - expectations, the customer is dissatisfied.

Whether a customer problem is real or perceived, the fact remains that a dissatisfied customer could cause serious problems. Although numbers may vary slightly, as the chart below shows, less than 30% of dissatisfied customers make a formal complaint. Another 30% reduce their future purchases, while about 20% completely stop buying that company's product.

Buyer reaction to product or business deficiencies: Almost 50% reduce or stop buying completely.



Source: Shycon Associates

Worse yet, bad news travels fast. The damage a dissatisfied customer can inflict on a business is much greater than the positive effect a satisfied customer is likely to generate. Studies have shown that an unhappy customer is likely to tell up to ten other people about his or her experience. Compare that to satisfied customer relaying the good news to only three other individuals. While advertising efforts go a long way to make customers aware of products and services, the actual decision to purchase is based on several factors, including weighing other purchaser experiences. In other words, potential customers are more likely to decide not to buy a product or service because of negative "word of mouth".

The Norstar MINUET ACD can help by giving the customer the ability to get the information they need, place an order quickly and easily, and provide them with easy access to service or to lodge complaints. Accessibility is one of the key components of customer service. The faster a customer problem is solved, the greater the likelihood of retaining that customer. In fact, a company will retain fewer than ten percent of non-complainers who have experienced minor problems, while more than 80% of those customers who complain and whose minor problems have been resolved quickly will repurchase.

2.6.4 Staffing

What is the general morale of people answering incoming calls? How are they coping with the pressure of a growing number of incoming calls?
How often do calls get backed up at the receptionist? Is the receptionist having difficulty distributing calls; knowing who is available?
Do you have a need to measure the performance of those handling incoming calls?

3.0 Product Description

Norstar MINUET ACD provides small, entry level call centers with an effective tool to manage and organize how calls are distributed. Norstar's suite of products for the Applications Module includes Norstar Voice Mail, Dial-by-Name, Norstar Interactive Voice Response and MINUET ACD.

The ACD system recognizes and answers each call and, if necessary, holds it in a queue until it can be directed to the next available call center agent. While in queue the caller is played a customer recorded digital voice announcement promoting products and services or encouraging the caller to continue holding.

Norstar MINUET ACD allows companies to increase revenue, increase customer satisfaction, increase staff productivity, lower 800 number charges and improve their office environment.

3.1 Features

3.1.1 Standard Features

Agents Logged In
An agent is an individual who answers an ACD call. You assign agents to a group or multiple groups. A maximum of 10 Agents can be logged into MINUET at one time.

Agent ID
Each individual agent must have an "Agent ID". MINUET uses the agent ID number to login and identify an agent to the system. The total number of Agents which can be configured in MINUET is 20.

2500 Analog Station Set Support
This includes support for 2500 telephones, cordless phones and headsets. The 2500 set can be used to perform the following agent functions: Login, Logout, Available, and Unavailable. A Login/Logout DN and Available/Unavailable DN must be configured in System Wide Administration.

Announcements:
Voice announcements play to callers to encourage callers to hold while they wait for an available agent or to promote products and services. Voice announcements can be quickly changed, making it easy to create announcements daily or as conditions change.

o Simultaneous Announcements
The total number of Recorded Announcements which can be played at one time is in direct relation to the number of Voice Channels which are active. MINUET supports a maximum of 4 voice channels.
o Recorded Announcements
The total number of Recorded Announcements allowed by MINUET is 6. Announcements are user recordable. An announcement is played for a caller when the caller reaches the particular announcement step in the Routing Table.

Answer Forcing with Zip Tone
Answer Forcing applies only to Agents wearing headsets. If Answer Forcing is enabled for an Agent, a call is automatically sent to an Agent when the Agent is available to take a call. A zip tone precedes the call to let the Agent know that a call is being forced to the headset.

Auto-Logout of Agents
Auto-Logout is a safety feature that is activated if an available agent does not answer the ACD call within the specified time period. If the time threshold is exceeded, the available agent will be logged out and the call re-directed to the next available agent.

Calls Queued Station Set Display
The total number of calls in queue and time of longest call in queue for a group. An Agent can view this statistic on the station set while on or off a call. Only the groups in which the Agent is logged in can be viewed.

Call Categorization
When a call is taken by an Agent, a 2 digit Category Code (within the range of 10 to 30) can be entered on the station during the wrap time after the call is completed. ACD MINUET then tracks the number of calls logged for each category by the Agents.

Disconnect Supervision
Disconnect Supervision is the change in the transmission of a call when it goes from "off hook" to "on hook" or in other words, when the caller hangs up. MINUET uses Disconnect Supervision to count abandoned calls. i.e., when a caller hangs up before an agent becomes available.

Groups
A group is a collection of individual agents qualified to answer a specific type of call. An individual agent can be assigned to more than one group. The total number of Groups which can be configured in MINUET is 2.

Groups Agent Simultaneously Logged-in
The total number of Groups into which one MINUET Agent can login is 2.

Language Support
Norstar MINUET ACD systems support English, French and Spanish for Agents from Norstar Stations sets. Whatever language the phone set is set to, the ACD automatically sends matching messages to that set.

LCD Prompted Set-based Programming

Norstar MINUET ACD can be programmed from any M7310 or M7324 station set. The programmer is led through a series of prompts using the station set soft keys to make selections and the keypad to enter data.

Lines
The total number of Lines which can be configured in MINUET is 15.

Longest Idle
This call routing method selects the agent who has been available the longest since last handling a call. This ACD call routing method is used when it is desirable to route calls equitably.

Overflow
This feature is useful for expediting call processing and allows calls to be made available to an alternate group other than the one for which the call was originally designated. The maximum number of calls that can wait for the group is specified in administration. Once the threshold is reached, calls are automatically made available to the alternate group in addition to the one for which the call was originally designated. If no agents are available in the second group, MINUET continues to monitor both groups for an available agent.

Password Protection
Set-based access to MINUET functions is password protected.

Real-time Configuration Changes
Changes are made, saved and updated immediately from the system administration set.

Routing Tables:
To distribute incoming calls effectively, the ACD needs a series of instructions. These instructions are found within the routing table.

- o Routing Tables Per Group
  For each Group, a user can specify a Day and a Night Routing Table.

- o Steps in Routing Table
  The total number of Steps which can be configured in MINUET for the Day Routing Table is 6 and the Night Routing Tables is 2. Users are led through the steps in the routing template and offered choices where applicable.

Routing Commands:
Routing Commands are specific instructions used in the routing table for determining how to distribute an ACD call. MINUET offers up to 10 different routing commands:

- o Announcement
  Plays the assigned pre-recorded announcement. If an agent becomes available before the announcement concludes, the announcement will be interrupted and the call distributed to the agent.

- o Disconnect
  Ends the call.

- o Distribute
  Searches for an available agent to answer the incoming call.

o Forced Announcement
Play an announcement that cannot be interrupted. If an agent becomes available during a forced announcement, the caller will hear the entire announcement before being distributed the agent.

o Go to Step
Functions as a loop command. This is used to send a call to a different step within the routing table.

o No Answer
When this command is the first step of a Routing Table, the call will continue to ring until the caller hangs up. This is used only after hours when a business does not wish to incur 800 number charges.

o Transfer to
Transfers a call to an internal Norstar extension.

o Voice Mail Transfer
When a call reaches this command in a Routing Table, the call will be transferred to a specified Norstar Voice Mail mailbox.

o Delay Answer
This command instructs the ACD to delay answering incoming calls for a specified time period. The caller hears ringing until the delay passes or an agent becomes available.

o Group
This command sends the call to the other ACD Group to follow that Group's routing commands.

Top Down (or Preferred) Agent Selection
This method of selection is used to send a call to the first available Agent closest to the top of the list. The top down method is frequently used when it is desired to send calls to the agent with the most expertise or experience.

Voice Channels
Norstar MINUET ACD systems use voice channels to play recorded messages. MINUET provides up to four voice channels and the voice channels can be shared with Norstar Voice Mail or Norstar Interactive Voice Response.

Wallboard Software Support
Wallboard support software is included with the MINUET core software. The software allows connection of a Wallboard to MINUET to display the following information: group number, number of calls in a queue, longest time of a call in queue, number of agents unavailable.

The number of agents unavailable represents the number of agents who have logged in but are currently in one of the following states: manually unavailable, on a non-ACD incoming or outgoing call, or on an intercom call.

MINUET ACD support MODEL 215R from Spectrum Corporation and must be supplied by the distributor or end user.

Wrap

The Wrap time is the time given to agents between answering ACD calls. This allows agents to categorize calls or do paper work between calls. It serves to improve customer service as the additional time allows agents to prepare for the next incoming call. Wrap length is user definable between the range of 0 - 60 seconds.

3.1.2 ACD Statistics

Norstar MINUET ACD provides statistics that can be accessed via a 2 line LCD display phone sets. These statistics are referred to as "peg counts". The information is accessed using one or more key-based functions and is displayed on the station set LCD. The system keeps a rolling 7 days worth of statistics.

If the user needs to communicate system statistics to others, he can simply write down the information from the LCD and enter it into a word processor or spreadsheet.

The following statistical categories will be displayed:

- Number of calls answered
- Number of calls abandoned
- Number of calls disconnected
- Average time to answer
- Average time to abandon
- Number of calls per category code

3.2 Components

3.2.1 MINUET Models

Norstar MINUET ACD English
French

The Norstar MINUET ACD provides small businesses and departments with a cost effective tool to manage and organize how calls are distributed within an organization. MINUET is designed for the entry level, small call center (formal or informal) with up to 10 active agents and introduces the Norstar user to basic ACD features and capabilities.

The Norstar MINUET ACD includes:

- Norstar MINUET ACD software with 4 active voice channels
- MINUET Administration Guide which includes the installation instructions, user reference information and configuration worksheets
- 1 Set-up Kit (includes 10 key cap inserts and quick reference cards, and 2 administrative key cap inserts and quick reference cards)
- Software Warranty Agreement
- 1 Norstar Voice Mail 3.0 Upgrade Key Code

Norstar MINUET ACD include software diskettes, documentation and a Norstar Voice Mail 3.0 upgrade Key Code. MINUET runs on the Norstar Applications Module with 16MB of RAM in a multiple application environment . Norstar Voice Mail 3.0, Norstar Interactive Voice Response, and Dial-by-Name are other applications for the Applications Module.

Norstar MINUET ACD is compatible with Compact DR5 (DS cartridge only), Modular DR5, Modular DR5 Centrex, Compact ICS and Modular ICS.

3.2.2 Documentation

The following Documentation Parts will be orderable for Norstar MINUET ACD systems:

Norstar MINUET ACD Administration Guide English
French

The Administration Guide includes installation instructions, user reference information and configuration worksheets. It provides information for hardware configuration, software installation and in-depth descriptions of how to use Norstar MINUET ACD features.

Audience: Technician doing installation and setup, System Administrators and Service Advisors

Norstar MINUET ACD Set Up Kit English
French
Spanish

This contains 10 agent key cap inserts and quick reference cards, and 2 administration key cap inserts and quick reference cards.

3.3 Compatibility

3.3.1 Norstar Systems

MINUET is compatible with the following Norstar systems:

Norstar KSU
Compact DR5 DS (Note 1)
Compact DR5.1
Modular DR5 (Note 2)
Modular DR5 CTX+ (Note 3)
Modular DR5.1
MICS RLS 1T1
MICS RLS 1T1 CTX
MICS CDA XC 1.0
MICS XL 1.0 (US only)
MICS USA XC 1.0
CICS 1.0
MICS RLS1 T1 DR1.1
MICS CDA/USA XC 1.1
CICS 2.0
MICS 2.0
Norstar VM 3.0 (Note 4)

Notes:
Blank indicates no compatibility
Y = Compatible

Note 1: Minimum version is NT5B10CE Rls 04 (Eng/Fre) NT5B10DE Rls 04 (Eng/Spa) - SP:30NSE08
Note 2: Minimum version is NT5B24CH Rls 04 (Eng/Fre) NT5B24DH Rls 04 (Eng/Spa) - SP:30MUL07
Note 3: Minimum version is NT5B29CE Rls 02 (Eng/Fre) NT5B29DD Rls 02 (Eng/Spa) - SP:30MGJ22
Note 4: Mini requires Norstar VM 3.0 when installed on Norstar VM NAM

Important: Disconnect Supervision is required in all cases.

3.3.2 Norstar Applications Module

Norstar MINUET ACD is compatible with the Norstar Applications Module I and the Norstar Applications Module II with either Digital Voice Cards or Media Services Base Interface Cards installed. 16 MB RAM is required to run the MINUET ACD program.

3.3.3 Norstar Voice Mail

The Norstar MINUET ACD runs with Norstar Voice Mail release 3.0 on the Norstar Applications Module. A Voice Mail 3.0 Security Key Code is included with MINUET.

Note that Software upgrades to Norstar Voice Mail Release 3.0 also require purchase of the upgrade CD ROM 3.0 software. The 3.0 CD ROM software kit can be installed at multiple sites, however, each site must have a security key code to install the upgrade.

The Release 3.0 security key code is for base Release 3.0 software and does not include the extra cost options — Desktop Messaging, Digital Networking, or Norstar Voice Mail Manager. However, the Release 3.0 security key code will upgrade Fax and AMIS capabilities on systems where they were already purchased and installed. Where systems have used nearly all of their message storage capacity, the upgrade may be unable to continue due to insufficient space. In these situations the primary hard drive must be replaced. This condition is most likely to be encountered on Release 1.X systems which had 12 hours of message storage.

Norstar-PLUS Voice Mail Release 1.X or 2.X customers who plan to install Release 3.0 and MINUET ACD must have 16 MB of RAM.

3.3.4 Norstar Station Set Requirements

Norstar MINUET ACD integrates seamlessly with the following Norstar station sets:

- o M7208
- o M7310
- o M7324
- o Analog station sets - Requires ATA.

3.3.5 Other Hardware Requirements

o A Norstar Telephone must be designated as a backup set for the ACD system. Calls will be routed to this phone in the unlikely event the ACD system goes down. **This set must remain connected to the Norstar system in order for the ACD system to function.***

* A backup M7324 telephone is an important addition for handling calls in the event of unforeseen problems such as natural disasters (for call center with fewer than 8 lines, a M7310 can be used). The backup set must be a dedicated set and should be located in an accessible area. An agent set can not be used as a backup set.

o An Uninterruptable Power Supply (UPS) is strongly recommended. The UPS minimizes the risk of losing valuable real-time calling information due to events of nature. It acts as a short term generator in the event of a power outage and guards against power surges/dips.

3.4 Installation and Maintenance

3.4.1 Installation

The following table provides an estimate for planning Norstar MINUET ACD installations.

Activity	Time Requirement
Software Installation	*15 minutes*
Record Greetings/Announcements, Configure Groups and Lines	25 minutes
Configure Agents	5 to 10 minutes per agent
Configure Routing Tables	10 minutes per table
Program Agent Station Sets	7 minutes per set

A typical system with 4 agents, 2 groups, and both a day and a night routing table would take approximately 2 hours to install and configure.

3.4.2 Maintenance

Norstar MINUET ACD maintenance activities may include:

Non-Trouble (may be performed by System Coordinator)
- Changing, adding or deleting agents
- Changing, adding or deleting groups
- Changing, adding or recorded announcements
- Changing, adding or deleting routing tables

Trouble (performed by distributor technician)
- Interviewing the customer
- Using the manual to determine cause of problem and reproducing the anomaly
- Shipping system to service center for repair if problem cannot be fixed on-site

Remote Maintenance
Norstar MINUET ACD will be supported through the use of remote support. Nortel's ITAS group can (with the customer's permission) dial-up the customer's MINUET system and perform remote diagnostics. When dialed in, the technician will be able to view the system on a real-time basis and assist in troubleshooting system problems. This capability is included in the standard support arrangements for the ACD product.

Remote maintenance for MINUET requires that Norstar Voice Mail be equipped with a modem to support the function. An internal modem is standard issue on Release 2.0 and higher of Norstar Voice Mail.

Norstar Remote Utilities
Since MINUET is programmed via the Norstar Station Set, configuration changes may be made using the Norstar Remote Utilities and a RAD. Note that announcements must be recorded on site in this scenario.

3.5 Product Specifications

Norstar MINUET ACD is a software Applications for the Norstar Applications Module . For hardware specifications refer to the Channel Introduction Package for Norstar Voice Mail 3.0. Channels on the Norstar MINUET ACD can be dedicated or shared with Norstar Voice Mail 3.0.

4.0 Competition

4.1 Qstar from DTI

Digital Techniques, Inc. manufacturers Qstar. Qstar is a low cost, standalone ACD product designed to work with Norstar key systems. Qstar is programmable via any Norstar set and uses voice prompts to guide the user through programming.

Qstar has three major limitations when compared to Norstar MINUET ACD. These limits are: only one ACD group, only 9 agent Ids and no call statistics unless an add-on statistical package (Qstat) is purchased. What do these limitations mean to your customer? If the customer requires more than 1 agent group, multiple Qstars are required. If more than 9 agent Ids are needed, multiple Qstars are required. If the customer wants to overflow calls to alternate agent groups during peak calling periods, multiple Qstars are required. And, if multiple Qstars are required, multiple Qstat packages and dedicated PCs are required. Also, even with multiple Qstars, agents cannot log in to more than one agent group.

Norstar MINUET ACD is a much more flexible product than Qstar. MINUET ACD has 2 agent groups and up to 20 agent Ids. Agents can belong to more than one group (i.e. agents can multi-task) and call statistics are a standard feature requiring no additional equipment. A feature by feature comparison of the two products is included below.

Capacities	MINUET ACD	Qstar
Initial Installed Voice Channels	4	1 to 4
Maximum Installed Voice Channels	4	4
Simultaneous Announcements	4	4
Recorded Announcements	6	6
Configured Agents	20	9
Logged In Agents	10	9
Groups	2	1
Groups Simultaneously Logged Into	2	1
Lines	15	11
Routing Tables per Group	2	2
Steps in Day Routing Table	6	4
Steps in Night Routing Table	2	2
Voice Mail Transfer Steps	4	1

Standard Features	MINUET ACD	Qstar
2500 Set Agent Support	Yes	No
Answer Forcing with Zip Tone	Yes	No
Auto Logout of Agents	Yes	Yes

Agent Selection - Longest Idle	Yes	Yes
Agent Selection - Top Down	Yes	Yes
Call Categorization	Yes	No
Wrap	Yes	No
Direct Transfer of Calls into Norstar Plus Voice Mail (Routing Command)	Yes	
No Answer (Routing Command)	Yes	
Delayed Answer (Routing Command)	Yes	
Overflow with look back to originating group	Yes	No
French Language Station Set Support	Yes	Yes
Spanish Language Station Set Support	Yes	Yes
Password Protection	Yes	
Position in Queue Notification	No	Yes
Real-time Configuration Changes	Yes	Yes
Set-based Statistics	Yes	No
LCD Prompted Station Set Programming	Yes	No

Set-Based Statistics (Peg Counts)	**MINUET ACD**	**Qstar***
Number of Calls Answered	Yes	No
Number of Calls Abandoned	Yes	No
Number of Calls Disconnected	Yes	No
Average Time to Answer	Yes	No
Average Time to Abandon	Yes	No
Number of Calls per Category Code	Yes	No

* Qstar's ACD Statistical Software is called Qstat. It is an optional add-on module that requires a Windows-based PC. Without the Qstat software add-on, Qstar has no reporting.

4.2 Hunt Groups and Uniform Call Distribution

Hunt groups are often offered as a standard feature by manufacturers on their larger key systems. Hunt groups arrange a number of extensions in either a linear or circular "hunting" scheme. Trunks on the system are programmed to ring directly to extensions in the desired hunt group. In a linear configuration, the incoming call would ring at extension 1. If the call is not answered after a certain number of rings, it is then transferred to ring at extension 2 and so on, down the chain of extensions. In a circular configuration, the system can be programmed to ring the longest idle extension in the group first and if no answer there, ring the next longest idle extension. Hunt group functionality does not offer recorded announcements to the caller while he waits, group members cannot logout or become "unavailable" and call statistics cannot be kept.

Uniform call distribution builds on hunt groups by (at a minimum) overflowing to a recorded announcement device. Some UCD's enable extensions to log in/out of the hunt group. However, in general, the number of additional queuing and call control features is minimal.

Norstar MINUET ACD provides much more advanced queuing capability, queue status displays on agents' sets and call statistics. Recorded announcements, multiple groups, day and night routing tables, overflow groups, agent log in/out, and forced announcements are just some of the features which make MINUET a more advanced and efficient routing and call handling product for small call centers. Additionally, MINUET is fully integrated with the LCD and soft keys on Norstar sets.

4.3 Other Competitors

While hunt group functionality and UCDs are Norstar MINUET ACD's primary competition in the entry level, small call center market, other competitive products may be encountered. Lucent's CMS ACD for Legend, Toshiba DK280 with Built-in ACD option (activated by soft key), Comdial QuickQ ACD for DXP and Innings ACD Star are all products which may be positioned against Norstar MINUET ACD. These products have the capacity for more agents, reporting functionality and more directly compete with Norstar PRELUDE and CINPHONY products.

Norstar MINUET ACD is a unique product offering entry level call center functionality as a cost effective enhancement to Norstar Voice Mail. MINUET is targeted toward a more "basic" call center application than the competitive products listed above and, consequently, direct comparison of MINUET to these products is misleading.

5.0 Promotion

(1) Full-color Sales Brochure
Glossy brochure providing the potential customer with information about the business advantages of ACD, and in particular, the special advantages of MINUET on Norstar.

(2) Solution Sales Sheets
Existing sales solutions sheets "Will ACD Make a Difference in my Business", "10 Good Reasons to Buy ACD", and "Cost Justification Worksheet" will be modified to address the low end of the market served by Norstar MINUET ACD.

(3) World Wide Web Site
The "www.nortel.com/norstar" internet site will be updated to include information on the MINUET product.

(4) Faxable Brochures
Norstar MINUET ACD collateral will also be available in faxable format.

6.0 Training Materials

6.1 Sales Training

Objective
The objective of the Norstar MINUET ACD Sales Training course is to provide participants the knowledge and tools required to successfully present and sell Norstar MINUET ACD. The course is designed to provide participants with training on product positioning, product components, market drivers and customer applications.

Pre-Requisite
Participants should have a basic working and sales knowledge of the Norstar or Norstar platforms and basic knowledge of the call center market. Basic telephony knowledge is highly recommended.

The following pre-course materials will be available for those who wish to acquired Norstar and basic call center knowledge: Norstar 101, a scripted presentation overview of the Norstar

product line; Call Center 101, a scripted presentation overview of the ACD market; and The Norstar Handbook, a quick reference guide for Norstar.

Audience
Sales Representatives, Sales Associates, and Telemarketing Representatives.

Course Content
The Norstar MINUET ACD sales training course will be in form of a Training Reference Package - a self-paced package designed for use by the distribution sales. The package will include the following:

(1) MINUET Presentation and Scripted Notes
(2) Features / Benefits Examples
(3) Market Applications
(4) Technical Data Sheets

6.2 Technical Training

Objective

The objective of the Norstar MINUET Technical Training material is to provide various participants with the knowledge and skill required to install, program, operate, and maintain the Norstar MINUET ACD on the Norstar Applications Module.

The Norstar MINUET Training material will be offered as a flexible training package. There will be both a self-paced Bulletin and a Computer Based Training (CBT) CD-ROM. Leader-led training will also be available by combining these two training resources together..

Pre-requisites

Norstar knowledge and experience is required.

Audience and Length

The Training material will be designed to meet the knowledge and skill requirements of installers, repair personnel and service advisors.

The *Installer* is anyone who installs, programs and uses Norstar.

The *Repair persons* function is similar to that of the installer. In addition to the tasks performed by the installer the repair person must also be able to identify and solve potential problems arising with the Norstar key system or ACD product. They are assumed to have the same level of experience as the installer.

The *Service Advisor* is the person usually sent by the distributor to train the end user on the programming and use of the Norstar system and ACD product. In this case it could include the implementation and configuration of the system.

The Norstar MINUET Technical Training material will be divided into 5 sections. The sections are presented in the order in which they should be taken and will be common to both the Bulletin and the CBT. The Bulletin and CBT are estimated to each be a half a day in length. The overall length of the combined Leader-Led course is estimated to be 1 day.

Lessons and Content:

1. Overview to Norstar MINUET ACD
   - An introduction of the whole product, its capacities, and functionality.
2. Installation of Norstar MINUET ACD
   - Detailed description of the software installation and Norstar system requirements.
3. Programming Norstar MINUET ACD
   - Detailed description of how to program the MINUET including configuration and the administration of groups, agents, , lines and System admin.
4. Operating Norstar MINUET ACD
   - Outlines the use of routing, Administration and Group Statistics sessions and Administration maintenance sessions.
5. Agent Functions of MINUET ACD
   - Details all of the Agent Functions including Agent logging in and out, Available/Unavailable, Cancel wrap, Calls Queued, Categorizing, Announcements and Messages

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norstar

NORTEL
NORTHERN TELECOM

Sales and Marketing Bulletin

Number: CALA-138-MB
Date: October 1997

Nortel CALA is pleased to announce the availability of the Norstar Desktop CTI technology - Computer Telephony Adapter 100. Norstar Desktop CTI (Computer Telephony Integration) combines Nortel's Norstar portfolio with the power of desktop computing via the Computer Telephony Adapter family of TAPI enablers outlined in this bulletin.

The convergence of personal computers (PC) and telephones has produced a new standard that allows Windows Telephony applications such as Personal Information Managers and PC Dialers to communicate with telephone switches. Turnkey enabler and applications software packages will be available directly from Nortel and now run on DR-5 or later Norstar systems.

This document details the Computer Telephony Adapter. The material that will be covered includes:

- Product Positioning
- Computer Telephony Adapter Product descriptions
- Norstar system requirements
- Ordering information

Product Positioning

Wherever there is a person working at a desk with a telephone and a computer - there is an opportunity to implement a Desktop CTI application.

- **Size, Scope, Complexity of Norstar CTI**

There is a wide range of application opportunities across a number of different implementation scenarios. Norstar's Desktop CTI will address every situation, from small standalone Knowledge Workers, to globally focused, enhanced call center functionality.

- **Stand Alone Knowledge Workers**

Traditionally, CTI applications were only found in formal call centers; as CTI used to be an expensive and complicated undertaking that could only be cost justified in environments with high call volumes and pronounced strategic and financial importance. But with the fairly recent proliferation of PC and LAN technologies, continually reduced price tags for CTI enablers, and innovative new off-the-shelf applications, CTI is now applicable to almost anyone. The graphical user interface that Windows-based telephony brings to the individual's desktop simplifies the use

of the standard tools, (i.e. conferencing, directory dialing, etc.) as well as enhances access to other functions (i.e. FAXing, selective review of voicemail, etc.,).

- **Formal Call Centers**

A formal call center is where a company will dedicate several people to answer similar kinds of telephone calls. The individuals, or agents, within the formal call center specialize in answering incoming calls and concentrate on that activity. A formal call center is one in which the flow of incoming calls is managed to achieve successful customer interaction while maximizing a company's return on investment in equipment and personnel. The management of expense is almost as important as managing service. CTI can reduce cost via increased productivity, (i.e. less staff accomplishing the same work objectives).

The call center should be viewed as the strategic business unit that will help manage customer service objectives and commitments to meet customers' growing expectations, (i.e. shorter hold times, auto callback of abandoned calls). It will help increase sales and improve customer goodwill by making companies more accessible to their customers and prospects, (personalized service, expanded revenue opportunities via data base references to other products/services).

- **Informal Call Centers**

Informal call centers, which are fueling much of the small call center growth, also have several people answering similar kinds of calls. These individuals, however, may or may not be dedicated to answering incoming calls. They may be part time agents and perform other duties within the business. Prospects for informal call centers are more difficult to identify as the person answering the call may not be identified as an "agent" or a "telephone service representative". They could be the local expert in a particular department that takes calls from specific customers or during specific times of the day in addition to performing other duties. Typically, an informal call center involves using call center capabilities to provide an enhanced form of customer satisfaction or revenue achievement by making the best qualified persons available by phone.

Norstar CTI Desktop Enablers - TAPI

Norstar DeskTop CTI (Computer Telephony Integration) combines Nortel's Norstar portfolio with the power of desktop computing. A TAPI (Telephony Application Programming Interface) application runs on the users desktop computer (TAPI compatible Windows environments), drawing-on and issuing telephony commands from that position. Requirements to integrate with the Norstar are:

- **TAPI Service Provider (SP)**

The TAPI SP 1.1 is the software that provides the TAPI enabling functionality for the inter-operation of Windows based desktop computers and the Norstar. This item is included in the Computer Telephony Adapter 100 enabler kits.

- **Personal Call Manager**

The Personal Call Manager application is a screen-based telephony application that provides P.C. based control over standard telephony functions and allows you to build your own personal directories and profiles. It is intended to provide the user a personalized, basic call handling and control function. This application is included in the Computer Telephony Adapter 100 hardware device kits.

Please note, this application requires a Windows 95 operating environment.

Overview of Personal Call Manager

The following is a list of the various functions/capabilities of PCM:

1. Dial
2. Answer/Hold/Unhold
3. Conference/Split
4. Transfer (blind and announced)
5. Call forward
6. Do Not Disturb (DND)
7. Calling Line Identification
8. Call Duration
9. Last callers/calls log with call detail

- **Computer Telephony Adapter 100**

The Computer Telephony Adapter 100 is an external device that connects a DR-5 (or greater) Norstar system to a Windows 3.1 (or greater) PC that, in conjunction with a TAPI Service Provider, which is included in this package (see above), enables a TAPI compliant application environment. In addition, the Personal Call Manager screen-based telephony application is included in this bundle.

Advantages:

- simple installation - just plug in the cables, no need to open the PC
- ideal for self-installation by the end user
- ideal for sales demos using portable laptop computers
- low risk of software conflicts since the Computer Telephony Adapter 100 uses COM1 or COM2 software interrupts which are standard

Norstar System Requirements

- **Compatibility**

North American Key Systems Supported by Norstar TAPI & TSAPI

Norstar 3X8 DR-5
Compact 6X16 DR-5
Modular 8X24 DR-5
Modular ICS R1/T1
Modular ICS XC
Compact ICS

NOTE: *Platforms not appearing in this table are not currently supported

- **Norstar KSU Configuration**

There are no specific configuration requirements to support TAPI applications on a Norstar KSU.

Product Ordering

The three products described in this bulletin the CTA 100, the TAPI SP provider, and the Personal Call Manager application are all part of the CTI bundle that will be introduced in CALA. This bundle will be

available November 1, 1997. Please consult your November issue of the Norstar Price Book for questions regarding pricing. The code to order the bundle is the following:

Computer Telephony Adapter 100 (CTA100) **A0669951** **NT8B83FA93**

(Includes the physical connection between the telephone and the computer, the TAPI SP enabler, and the Personal Call Manager PCM application).

If you have any questions or comments, or require further information, please contact:

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norstar

NORTEL
NORTHERN TELECOM

Sales and Marketing Bulletin

Number: CALA-139-MB
Date: October 1997

Nortel CALA is pleased to inform of the availability of a product manufactured by a member of the Nortel's Business Affiliate program, which enhances the capabilities of the Norstar platform by allowing the digital station modules of the Modular ICS and 8x24 to be located up to 3 kilometers from the KSU.

Introduction

Digital Techniques Inc. announces the availability of the ***Module Extender for Norstar***. This device is designed for the Norstar Modular ICS or Norstar Modular 8X24 and permits the remote placement of modules and applications at distances up to 3 kilometers or 1.9 miles from the KSU, through long fiber connections.

Product Responsibility

Digital Techniques Inc. is solely responsible for the design, manufacture, marketing, sale, distribution, support, and warranty of the Module Extender for Norstar.

Market Positioning

The Module Extender for Norstar should be positioned as an enhancement to Norstar customers that provides the capability to extend the reach of the core Norstar installation to remote locations. The Module Extender for Norstar has a number of possible applications including:

OPX Expansion: The Module Extender for Norstar permits up to 10 Fiber Station Modules to be placed in different locations at distances up to 3 kilometers from the Norstar core installation effectively tying together several branch locations into a single "Virtual Norstar" with all the benefits of full integration of core functions, applications and peripherals.

Multiple Dedicated Applications: In departmental environments, customers can share core Norstar KSU resources while still allowing departments full control over ACD or Norstar Voice Mail applications.

Campus Companion Installations: In campus environments with several buildings in proximity to one another, Companion can be configured to provide full access to personnel as they move around the facility.

Multiple Tenant Applications: The Module Extender for Norstar permits several customers in a mall or office complex environment to share the benefits of a Norstar system among their locations.

Product Description

Package Contents

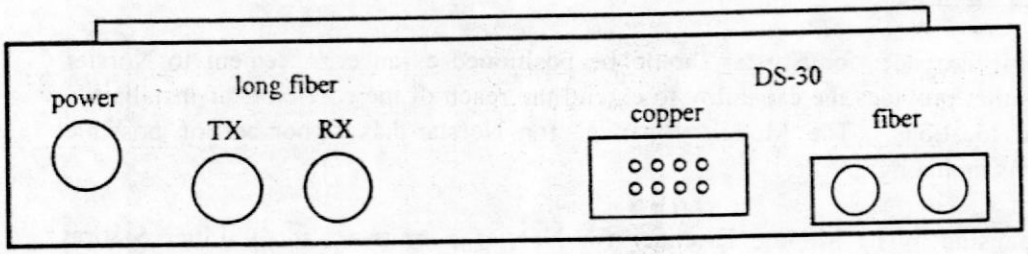
The DTI Module Extender for Norstar, model number "MODEXT" includes the following components:

One (1) Local Module Extender with power supply;
One (1) Remote Module Extender with power supply;
One (1) 2.1 m short fiber cable with fiber cable plugs on either end, mounted on a Norstar fiber cable spool;
Eight (8) mounting screws
One (1) English installation and user guide which includes a wall-mount template.

Module Extender Units

The Module Extender units are dolphin gray and measure 7.75" x 4.25" x 1.5" (19.7 cm x 10.8 cm x 3.8 cm). They are labeled "DTI Module Extender - Local KSU Unit" and "DTI Module Extender - Remote Module Unit". Two LEDs for troubleshooting are mounted on the front of each unit and are labeled "DS-30" and "Long Fiber". The Modules may be desk or wall- mounted.

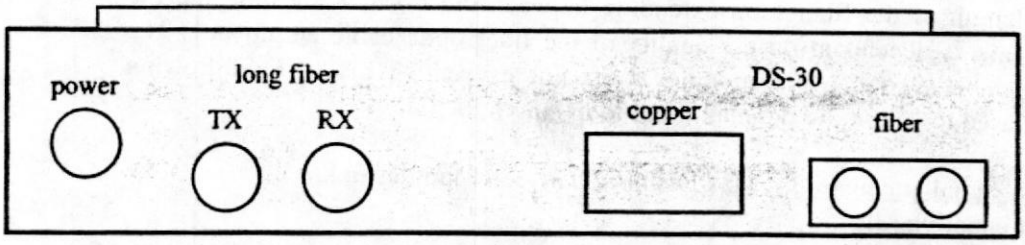
The back of the Local KSU Unit is shown below:



Connectors are provided as follows:

Power: Accepts the female receptacle of the provided power supply
Long Fiber TX and RX: Accepts the male connectors to the long fiber run between the KSU and module
DS-30 Copper: Accepts a Norstar DS-30 copper connector (for use with Modular 8X24, or the Modular ICS)
DS-30 Fiber: Accepts a Norstar DS-30 fiber connector (for use with Modular ICS)

The back for the Remote Module Unit is shown below:



The connectors provided are identical to the Local KSU Unit with the exception that no DS-30 Copper connector is provided.

KSU Interface

The Module Extender for Norstar may be connected to a Norstar KSU as follows:

Norstar KSU Type	Expansion Card Type	Expansion Card Part Number	Module Extender DS-30 Connection
Modular ICS	Mod ICS Fiber 2 Port	A0404244	Fiber
Modular ICS	Mod ICS Fiber 6 Port	A0404245	Fiber
Modular ICS	Combo Fiber 6 Port Svc	A0632426	Fiber
Modular ICS	Mod ICS Copper 2 Port	A0405796	Copper
Modular ICS	Mod ICS Copper 6 Port	A0405797	Copper
Modular 8X24	2 Port Copper	A0338794	Copper
Modular 8X24	6 Port Copper	A0338796	Copper

System Capacities

The System Capacities for Module Extenders are as follows:

Norstar KSU Type	Software Load	Capacity of Module Extenders
Modular ICS	NA-MICS	6
Modular ICS	MICS - XC	10 + 2 Companion
Modular 8X24	Any	6

Product Specifications

Power	Voltage Current Consumption Plug Type / Size	12 V ac 600 mA 10 watts max Barrel / 2.1 mm
Distance	Max Distance from KSU Max Distance from Module	6 Feet (2 meters) 6 Feet (2 meters)
Environment	Temperature Relative Humidity	0 to 50 degrees C 5% to 95% non-condensing

Maximum Long Fiber Loop Length

The maximum length of the fiber loop extending between the Local KSU unit and the remote module unit is dependent on the quality of the fiber optic cable employed. The signal attenuation between the two modules must not exceed 12 dB. The following formula may be used to determine the maximum loop length:

$$\frac{\text{12 dB maximum signal attenuation}}{\text{Fiber cable attenuation (dB/km)}} = \text{Max Distance between Modules in km}$$

Module Extender Installation

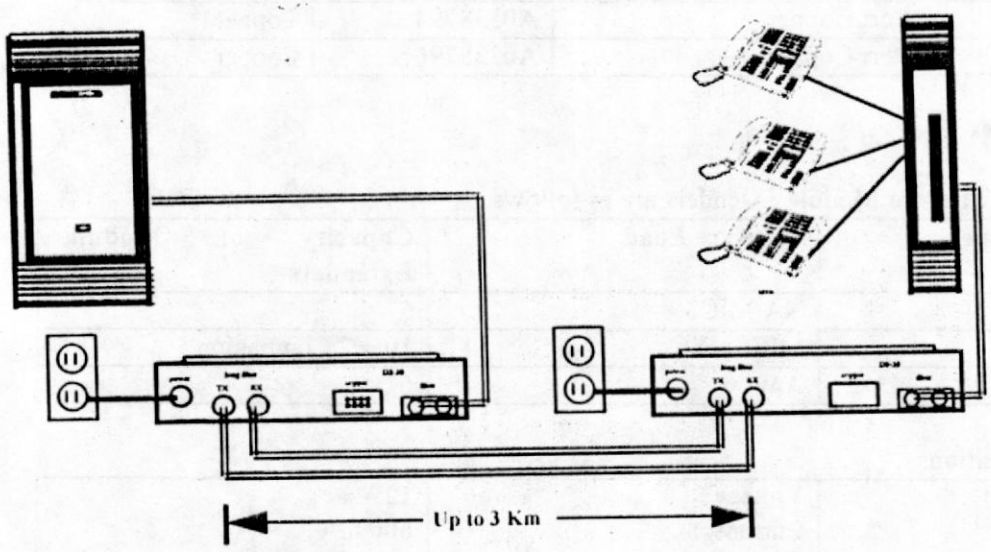
The following procedure should be used to install the Module Extenders:

1. Ensure that the units are in the correct location:
   - The Local Module Extender is placed next to the KSU
   - The Remote Module Extender is place next to the Station Module at the remote location;

2. Attach the provided adhesive bumper feet to the bottom of the Extender Unit in the four guides;

3. If the Extender units are to be wall mounted, use the wall mount template and screws provided;

4. Connect the cable and wires as shown below:



Technical Support, Training, Promotion, Warranty and Repair, and Ordering Information

For further information on DTI's Module Extender for Norstar including information concerning technical support, training, promotion, warranty and repair and price / ordering information, please contact:

Dan Ptak
Product Manager
Digital Techniques, Inc.
(972) 390-6202
(972) 727-4243 (FAX)
danptak@dtechs.com

or visit DTI's web site at:

www.digitaltechniques.com

If you have any questions or comments, or require further information, please contact the Norstar CALA group:

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norstar

NORTEL
NORTHERN TELECOM

Sales and Marketing Bulletin

Number: CALA-119-MB
Date: June, 1997

Norstar StarTalk Flash Release 1.5

Nortel Enterprise Networks is pleased to introduce StarTalk Flash Release 1.5, available May 30, 1997, which replaces all previous StarTalk Flash software releases. New CPC codes and engineering codes for Release 1.5 are included in the chart at the bottom of this communique. With Release 1.5 Norstar is introducing new KSU compatibility, some software patches, and support for the system reporting to correctly reflect the year 2000. Specifically, the changes in Release 1.5 are:

- Year 2000: The date on system reports will correctly reflect the year 2000, **for example, dd/mm/00.** Without upissuing to Release 1.5, system reports will incorrectly reflect the year as 100, **for example dd/mm/100**.
- Release 1.5 provides full MICS and CICS 2.0 compatibility including line numbering support up to 500 lines.
- Software fixes in Release 1.5 address the low volume problem on external calls and the seldom encountered problem where a specific mailbox could not be created or deleted.

Listed below are the new engineering and CPC codes for StarTalk Flash Release 1.5:

NEW CODES			OLD CODES	
AO679505	NT5B06EA-93	STARTALK FLASH 1.5 MODEL 2 Eng/Frch 110v	AO655998	NT5B06AT-93
AO679506	NT5B06EB-93	STARTALK FLASH 1.5 MODEL 2 Spa/Eng 110v	AO656002	NT5B06DL-93
AO679507	NT5B06EC-93	STARTALK FLASH 1.5 MODEL 2 Frch/Eng 110v	AO656008	NT5B06BK-93
AO679508	NT5B06ED-93	STARTALK FLASH 1.5 MODEL 4 Eng/Frch 110v	AO655999	NT5B06AU-93
AO679510	NT5B06EE-93	STARTALK FLASH 1.5 MODEL 4 Spa/Eng 110v	AO656003	NT5B06DM-93
AO679511	NT5B06EF-93	STARTALK FLASH 1.5 MODEL 4 Frch/Eng 110v	AO656009	NT5B06BL-93
AO679644	NT5B78CF	STARTALK FLASH 1.5 Software Feature Cart. Eng/Frch	AO656013	NT5B78CD
AO679645	NT5B78DG	STARTALK FLASH 1.5 Software Feature Cart. Eng/Spa	AO656014	NT5B78DD
AO680795	NTAB2265	STARTALK FLASH 1.5 DOCUMENTATION KIT (Frch)	AO407939	NTAB1264
AO680796	NTAB2266	STARTALK FLASH 1.5 DOCUMENTATION KIT (Eng)	AO647290	NTAB1827

A0679512	NT5B06EG-93	STARTALK FLASH 1.5 MODEL 2 Eng/Frch 220v	A0656000	NT5B06AV-93
A0679515	NT5B06EJ-93	STARTALK FLASH 1.5 MODEL 2 Frch / Eng 220v	A0656010	NT5B06BM-93
A0679514	NT5B06EH-93	STARTALK FLASH 1.5 MODEL 2 Spa / Eng 220v	A0656005	NT5B06DN-93
A0679517	NT5B06EK-93	STARTALK FLASH 1.5 MODEL 4 Eng/Frch 220v	A0656001	NT5B06AW-93
A0679519	NT5B06EM-93	STARTALK FLASH 1.5 MODEL 4 Frch / Eng 220v	A0656011	NT5B06BN-93
A0679518	NT5B06EL-93	STARTALK FLASH 1.5 MODEL 4 Spa / Eng 220v	A0656006	NT5B06DP-93

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[redacted]

norstar

NORTEL
NORTHERN TELECOM

Sales and Marketing Bulletin

Number: CALA-118-MB
Date: June, 1997

Norstar Year 2000 Transition Compliance

The Year 2000 is an important subject to anyone involved with telecommunications and computer systems. The change from 1999 to 2000 can create potential incompatibilities due to processor calendar calculations. In addition, the Year 2000 is a leap year, a century event that only occurs every 400 years, which adds further complexity to the transition.

Nortel, as the industry leader in digital communications systems, wants to ensure that you are fully conversant in this important topic so that you are able to make logical, informed decisions. We recognize that it is important for you to be able to understand the Year 2000 compatibility of the Norstar portfolio so that you can plan and prepare your transition over the next three years.

Included in this bulletin is a concise explanation which provides you with the Year 2000 compatibility for each Norstar system and Norstar application. It also includes a statement on the Vantage product line, which was Manufacture Discontinued in 1990. For products which require evolution for the Year 2000 we have provided a recommended plan.

In keeping with Nortel's commitment to investment protection, we will continue to work with our Authorized Distributors to offer you cost effective and efficient business solutions.

Norstar/Norstar-PLUS Systems

All Norstar/Norstar-PLUS systems will transition into the Year 2000 with no issue. This has been thoroughly tested and verified in Nortel Technologies laboratories. This includes all software releases of core systems which includes 3X8, Compact 616, Modular 8X24, Compact ICS and Modular ICS.

Norstar Voice Mail

The Norstar Voice Mail release 1.0 will encounter minor incompatibilities with the Year 2000 transition. The Norstar Voice Mail release 1.0 report will sometimes show the Year 2000 as "100" instead of "00", for example, February 3, 2000 would read 02/03/100 instead of 02/03/00 as it should. The voice mail operation is unaffected, but the report will continue to display dates as stated.

This situation was addressed in Norstar Voice Mail 2.0, which was available in July 1996, and which was provided as a free upgrade to Norstar Voice Mail 1.0 customers. Distributors have been provided with the software to allow them to provide upgrades from Norstar Voice Mail 1.0 to 2.0.

StarTalk FLASH

The StarTalk FLASH will encounter minor incompatibilities with the Year 2000 transition.

All StarTalk FLASH releases that are prior to the StarTalk FLASH 1.5 software release will sometime show the Year 2000 as "100" instead of "00", for example, February 3, 2000 would read 02/03/100 instead of 02/03/00 as it should. The voice mail operation is unaffected, but the report will continue to display dates as stated.

The situation will be addressed in the release of StarTalk FLASH 1.5, which makes it compatible with the CICS 2.0 and MICS 2.0 release.

StarTalk

The StarTalk will encounter minor incompatibilities with the Year 2000 transition.

All StarTalk products exhibit the following state when the date changes to January 1, 2000. The internal clock gets stuck at the year 1999, although the day and date will rollover to January 1 properly. The voice mail operation is unaffected, but the reports will contain date errors.

This situation was addressed in the StarTalk upissue release 2.04L which makes it compatible with the DR 1.1 software release (Jan/97). It is provided as a free upgrade to customers upgrading their Modular ICS systems to DR 1.1.

Optionally on January 1, 2000, they can simply reboot their system and the date will revert to the default of January 1, 1991. This will correct any reporting issues, since those issues are all associated with the year portion of the date. The year will be reported as 1991, but in all other aspects the system will function normally.

StarTalk Mini - Manufacture Discontinued

The StarTalk Mini will encounter minor incompatibilities with the Year 2000 transition. Since this product has been Manufacture Discontinued, there will not be any product development to make it compliant.

All StarTalk Mini products exhibit the following state when the date changes to January 1, 2000. The internal clock gets stuck at the year 1999, although the day and date will rollover to January 1 properly. The voice mail operation is unaffected, but the reports will contain date errors.

Optionally on January 1, 2000 customers can simply reboot their system and the date will revert to the default of January 1, 1991. This will address any reporting issues, since those issues are all associated with the year portion of the date. The year will be reported as 1991, but in all other aspects the system will function normally.

Remainder of Norstar Product Line

The remainder of the Norstar product line, past and present will transition into the Year 2000 with no issues. This has been thoroughly tested and verified in the Nortel Technologies laboratories.

Future Norstar Products

A test of the Year 2000 transition has been added to the Norstar Product Verification test suite to ensure compliance for new products being developed.

Third Party PC based Applications

Nortel is not responsible for Year 2000 compliance of third party PC based applications which interface with the Norstar system. Although many applications might utilize the Norstar system clock or even gather accurately-

dated information from the Norstar TCM loop, the responsibility for Year 2000 compliance of these products remains that of the vendor or manufacturer.

Vantage - Manufacture Discontinued

Vantage systems will encounter minor incompatibilities with the Year 2000 transition. Since this product portfolio was Manufacture Discontinued in 1990, there will not be any product development to make it compliant.

It should be noted that none of the phones have displays and the date and time are only used in the SMDR records. All Vantage products will exhibit the following state when the date changes to January 1, 2000. The year will show 0000, although the time, day and date will rollover to January 1 properly. The SMDR operation is unaffected, but the reports will continue to display dates as stated..

Thank you for your interest in the current and future functionality of the Norstar product line. Nortel is committed to building strong partnerships with our customers by understanding and responding to their needs. Nortel has a proven record of developing telecommunication products with the highest quality to offer you a cost effective and efficient business solution.

If you have any questions or comments, or require further information, please contact:

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Attn: Comunicaciones

NORTEL
NORTHERN TELECOM

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Send this form via fax to the following number (954) 851-8818, attention: Claudia Joannou, Documentation Manager.

norstar

NORTEL
NORTHERN TELECOM

Sales and Marketing Bulletin

Number: CALA-129-MB
Date: July 1997

Norstar Modular ICS vs. Nitsuko 384i

Attached you will find a document which compares the Norstar Modular-ICS key system versus Nitsuko's 384i.

The main advantages of Norstar MICS versus Nitsuko's 384i are the following:

- The very complex programming structure in the Nitsuko forces the end user to depend on an installer for almost any kind on change in the system.
- Norstar's unsurpassed reliability and durability are quickly observable when the two systems are compared side by side. Nitsuko does not have a strong reputation for quality.
- The Norstar system is much easier to use. The fact that all of Norstar telephone sets have a liquid crystal display (LCD) makes the system very friendly for the end user.
- Norstar applications surpass Nitsuko in functionality and are integrated with the Norstar Modular-ICS to provide the user with the same friendly interface found on the core unit.

If you have any questions or comments, or require further information, please contact:

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COMPETITIVE FLASH

NORSTAR MODULAR ICS
VS.
NITSUKO 384i

SYSTEM SET UP AND PROGRAMMING

The Nitsuko 384i is shipped as an empty shell. The power supply, central processing unit, trunk and station cards must all be installed on site and connected to the appropriate filter units for protection against outside power surges. The trunk and station cards are PCB cards and must be handled with extreme caution to avoid damage. Ground Start and Calling Line ID interfaces must be attached to the Loop Start PCB card further risking damage to one or both cards.

⇒Norstar Modular-ICS is shipped "ready" from the factory. Power supplies and processors are already installed. Trunk and station modules are encased in plastics to prevent damage and are easily installed on the system by inserting into the appropriate slot or attaching to the appropriate expansion ports.

When the Nitsuko 384i is powered up, the system self-configures. The system recognizes the installed cards and station sets and automatically assigns ports and extension numbers. Also, system software assigns default settings to all functions. Consequently, once the 384i is powered up, it is ready to make and receive calls without need for additional programming.

Changing the default programming to meet customer requirements is a long and tedious process. Programming on the 384i is command code driven. The programming manual is full of lengthy flowcharts which do not indicate what the system default settings are (default settings are outlined on another page) and reaching each step in the chart requires entering one or more programming codes. Programming is complex and often difficult to follow. A technician will generally be required to make even the simplest of programming changes. Furthermore, there is no feature which allows you to copy the programming configuration of one line or station to another. Consequently, if several lines or stations require identical configurations, the technician must manually program each one.

⇒While Norstar Modular-ICS does require some initial programming before the system is ready to make and receive calls, programming on Norstar is menu-driven and utilizes the LCD and soft keys on the Norstar station set. The programmer is taken step-by-step through the procedure, presented with programming options and prompted for choices. This simple programming interface makes it easy for the customer to make minor system and station programming changes without need for a technician. Additionally, Norstar's copy programming feature allows the programmer to "cut and paste" configuration parameters when several lines or stations require identical programming. This feature reduces installation time and, consequently, reduces cost to the end user.

STATION SETS AND USER INTERFACE

The Nitsuko 384i offers the 5 station sets outlined below, as well as, a single line set. Only the Super Display Set has soft keys and not all sets have displays.

	24 Button Super Display	32 Button Display Set	16 Button Display Set	32 Button Set	16 Button Set
Fixed Feature Keys	14	14	14	12	12
Programmable Keys	34	42	26	42	26
Display Size	8x20	2x20	2x20	-	-
Speakerphone	Yes	Yes	Yes	No	No
Soft Keys	12	No	No	No	No

Nitsuko utilizes two sets of codes for system features. There is a code which allows the user to manually activate a feature from the key pad. However, should the user wish to program the feature onto a one touch key, a different code is required. This two code method is confusing and redundant.

When a feature button is activated on the Nitsuko set, the user is given a prompt if more information must be entered to activate the feature. The set does not give any options, only a indication that information must be entered. The user must know from memory or manual what the system wants (i.e. what code to enter). Furthermore, users without display sets must know without a prompt that additional information is required to activate the feature.

⇒All Norstar sets have displays and the M7310 and M7324 have interactive soft keys. Feature use on Norstar is intuitive as users are presented with options, prompted for responses and guided step-by-step through feature activation. Norstar's user friendly interface eliminates the need to memorize codes and reduces training time.

ISDN

Nitsuko 384i presently supports ISDN-PRI. BRI is not presently available. Further analysis of Nitsuko's PRI interface will be conducted in the future.

Norstar's BRI solution is available in 1997. Norstar offers a variety of BRI cards - a 2 port U interface card, 4 port U interface card and a 4 port ST card - which allow customers to start small and then grow as their BRI needs increase. Norstar's Computer Telephony Adapter 500*dm* takes BRI to the desktop and allows simultaneous voice and data without need for additional wiring.

Norstar's PRI solution will be introduced in 1998.

SYSTEM FEATURES

The Nitsuko 384i has a number of features which are not available on Norstar. These features could be classified as "nice to have" features but these features are not found on the majority of our competitors systems.

- Alarm. Use the phone set like an alarm clock to remind you of appointments and meetings.

- Barge In. Allows a co-worker to break into your established telephone call. Monitor mode allows the co-worker to listen to but not participate in the conversation. Speech mode allows the co-worker to listen to and participate in the conversation. By default, each extension on the system is programmed to allow Barge In Monitor Mode. This feature is very invasive.

- Call Forwarding. The system allows you the option of call forwarding ALL CALLS, INTERCOM CALLS ONLY or EXTERNAL CALLS ONLY. However, the system does not allow chaining of call forwards, i.e. ext 301 call forwards to ext 302, ext 302 call forward to ext 303, etc.

- Conferencing. System allows 4 party conferencing.

- Do Not Disturb. The system allows the user to choose DND for external calls only, DND for paging, internal and transferred external calls, DND for paging and all internal and external calls, or DND for incoming call forwards.

- Reverse Voice Over. Allows a user on a call to make a private intercom call to a co-worker while remaining on the first call. The initial caller cannot hear the Reverse Voice Over conversation.

- Selectable Display Messaging. A user can select a preprogrammed message for their extension. Intercom callers will see the selected message displayed on their LCD when they call the user's extension. Messages can be appended with dates, times or phone numbers. Preprogrammed messages include: In Meeting Until ..., Out Until..., Please Call Me On..., Out for Lunch Back At..., Business Trip Until..., Gone for the Day, and On Vacation Until...

- Voice Over. Off hook voice announce.

APPLICATIONS

If your customer requires applications now or in the future, Norstar's integrated applications portfolio is a hands down winner against Nitsuko.

- **Voice Mail.** Nitsuko Voice Mail 2002 (NVM 2002) is a basic voice mail system. While the system does have a fax on demand option, fax mail and desktop messaging options are not available. Additionally, NVM 2002 is not integrated with the displays or soft keys on Nitsuko phone sets. If the user has not memorized voice mail function codes, he/she must know to press "0" to get voice prompts of menus and functions.

  ⇒Norstar-PLUS Voice Mail is a full featured voice and fax mail system. A desktop messaging option will be available with Release 3 of the product in September 1997. Norstar-PLUS Voice Mail is fully integrated with Norstar phone sets. The LCD and soft keys prompt responses from users and display options available, eliminating the need to memorize codes and reducing training time.

- **ACD.** The Nitsuko 384i comes with a built-in ACD system which supports 144 agents in 8 agent groups. Features supported include: system and group supervisors, overflow routing, silent call monitor, agent help, and work time (wrap time).

  ⇒Nitsuko's built-in ACD has no reporting capabilities and external Voice Announce Units (VAUs) must be purchased from Nitsuko to record ACD system and queue announcements. The queue status display option is available to supervisors only

and not agents. Agents can only be logged into one group at a time. Furthermore, when ACD programming changes are made (e.g. adding a new agent to the system), the entire 384i phone system must be powered down and rebooted for the changes to take effect.

- **Mobility.** Nitsuko has a 900 Mhz Digital Cordless Phone.

  ⇒Nitsuko's cordless product operates in the general purpose (and crowded) 902 - 928 Mhz frequency range. This spectrum is not protected by any standards and interference is possible. Nitsuko's cordless product is a single cell / single user cordless phone which limits the phone's coverage area. Calls will be lost if the user roams outside the range of its single cell.

  ⇒Norstar COMPANION operates in the 1.92 to 1.93 Ghz frequency range which is dedicated to PCS equipment and has interference protection. COMPANION is a multi-cell / multi-user wireless solution. This means COMPANION users can roam the building (up to thousands of feet from their desks) without ever losing a call. Calls are seamlessly transferred from one base station (cell) to another as the user moves through the building.

- **CTI.** The Nitsuko 384i is TAPI compliant.

  ⇒TAPI enabling the 384i requires disassembling the phone set to install the TAPI hardware and entering and altering key system programming for each TAPI enabled station. Both of these tasks generally require a technician. Nitsuko does not supply any CTI applications.

  ⇒Norstar's Computer Telephony Adapters can be easily installed by the end user and no KSU programming is required to enable TAPI. The Computer Telephony Adapter comes bundled with the Personal Call Manager application and additional CTI applications are available through Nortel's VISIT organization and the Business Affiliates and Partners programs.

  ⇒Norstar is also TSAPI compliant.

SYNOPSIS

Complex, command code driven system programming is the Nitsuko 384i's major weakness. However, this complexity may not be apparent to or may have little effect on the customer. Customers are more concerned with items that effect them directly daily. Complex programming has a more direct effect on system installers and technicians but as they become familiar with the system they develop proficiency in programming it.

While the Nitsuko 384i does have some unique features, the Norstar Modular-ICS is a superior overall product. When competing against Nitsuko, emphasize Norstar's user friendly interface with LCDs on all sets and soft key integration. This interface takes the guesswork and memorization exercises out of the phone system. Norstar's intuitive user interface reduces training time and, consequently, reduces cost to the customer.

Norstar's unsurpassed reliability and durability should also be highlighted. Nitsuko does not have a strong reputation for quality. A quick visual comparison of the Norstar phone set to a Nitsuko set makes this point obvious.

Finally, if your customer requires any applications, Norstar should be the hands down winner. Norstar applications surpass Nitsuko in functionality and are integrated with the Norstar Modular-ICS to provide the user with the same user friendly interface found on the core unit.

	Nitsuko 384i	norstar
Reliability	Nitsuko does not publish Mean Time Between Failures (MTBF) statistics.	Norstar Modular-ICS's MTBF is 50+ years and the MTBF on Norstar station sets is 99 years.
Usability		
• **System Programming**	• Programming is command code driven.	• Programming is menu driven. Changes can be easily made by customer from any M7310 or M7324 set without need for a technician.
• **Moving Stations**	• Moving a set requires reprogramming the system which usually requires a technician.	• Norstar offers Auto Set Relocation as a standard feature.
• **Feature Programming**	• Nitsuko sets give a tone indication that programming was successful. But, users with non-display sets have no way of verifying what is programmed on a key. • Incoming callers get a busy signal when users are programming features on their Nitsuko phone.	• All Norstar sets display a "Programmed" message when a feature is successfully programmed and a Button Inquiry (Feature *0) allows users to verify what is programmed on each key. • Norstar does not block incoming calls while users are programming their phones.
• **Soft Key Interaction**	• The Super Display Set is the only Nitsuko set that has soft keys.	• Norstar's M7310 and M7324 sets automatically display soft key prompts corresponding to the task the set is performing.
System Capacity	• Nitsuko 384i's maximum capacity is 128 lines and 256 stations.	• Norstar's maximum capacity is 48 lines, 192 digital stations and 60 Companion wireless sets.
T1	• Requires T1/PRI Interface PCB. • Max. 5 per system.	• Requires Digital Trunk Interface. • Max. 2 per system. Must be installed in core ICS.
ISDN		
• **PRI**	• Requires T1/PRI Interface PCB. • Max. 5 per system.	• PRI available on Norstar in 1998.
• **BRI**	• Not available.	• BRI available on Norstar in 1997. Three types of BRI cards will be offered: a 2 port U interface card, a 4 port U interface card and a 4 port ST card.
Analog Connectivity	• 8 or 16 port Analog Station PCB	• Norstar's 8 port analog station module is now available. • Analog Terminal Adapter (1 analog port)
Station Sets	• 3 of 5 Nitsuko station sets have displays.	• All Norstar station sets have displays.

	Nitsuko 384i	norstar
Voice Mail • **Max. # ports** • **No. of Mailboxes** • **Max. storage** • **AMIS Networking** • **Fax Integration** • **E-mail Integration** • **Connection to system** • **Programming** • **Soft Key Integration**	NVM 2002 • 16 ports • 1000 • 24 hrs • Yes • Fax on demand only • No • 1 analog stn port per voice mail port • Requires a PC • Voice Mail is not integrated with LCD or soft keys on 384i.	Norstar Voice Mail • 16 ports • 1000 • 67 hrs • Yes • Yes • Scheduled with Release 3 • 1 digital stn port per 2 ports of voice mail • From any M7310 or M7324 set • Voice Mail is fully integrated with the LCD and soft keys on Norstar sets.
Mobility • **Cordless** • **Wireless**	• Available • Not available	• Not available • COMPANION
CTI • **TSAPI compliant** • **TAPI compliant**	• No • Yes	• Yes (Not introduced in CALA yet) • Yes (Not introduced in CALA yet)
PC Console	Available	Available in 1998.
IVR	Not available	Available in 1997/1998.

NITSUKO 384i SYSTEM COMPONENTS

COMPONENT	DESCRIPTION
Main Cabinet	• houses CPU PCB • 1 slot dedicated for a 16 port digital station card • 6 universal slots
Expansion Cabinet	• 9 universal slots
Main Power Supply	
Expansion Cabinet Power Supply	
CPU PCB with Software	• central processor
16DSTU	• 16 port digital station PCB
8ASTU	• 8 port analog station PCB
16ASTU	• 16 port analog station PCB
8ATRU	• 8 circuit analog loop start PCB
8GSAU	• installs on 8ATRU to convert loop start PCB into an 8 circuit analog ground start PCB
Caller ID PCB	• installs on 8ATRU to provide CLID
4ATRU-EM	• 4 circuit E&M trunk PCB
4ATRU-LD	• 4 circuit DID trunk PCB
T1/PRI PCB	
4PGDU	• 4 circuit page/door box PCB
CDTU-A/B/C	• conference circuit PCBs
24FU Trunk Filter Unit	• filter unit protection for 24 CO lines
48FU Station Filter Unit	• filter unit protection for 48 extensions
Door Chime Box	
OPA/VAU	• voice announce unit module for auto attendant and ACD
3DCI-A	• 3 RS-232 serial ports for connection of 3 standalone data devices (modem, PC, printer)
3ACI-A	• allows connection of 3 external MOH or external page systems
DCI-A	• 1 RS-232 serial port for connection of 1 standalone data device. Required for TAPI.
DCI-B	• 1 parallel port for connection of standalone data device

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Magellan Passport Model 160

Flexible, Cost-Effective, High-Performance Networking

Passport Model 160 (GIF 49971 bytes)

Magellan Passport Highlights

- Magellan Passport is an ATM enterprise network switch which provides:
- consolidation of data services including LANs, SNA/APPN, with ATM, voice, video onto a single network
- high-performance frame relay
- ATM access & trunking capability
- sophisticated traffic management
- unmatched network availability
- powerful, flexible network management system

Corporations and organizations are faced with both escalating demands for higher bandwidth and the high cost of maintaining separate networks. In response they are seeking cost-effective ways to consolidate multiple voice, data and video networks, as well as new applications, onto a single, high-performance, multimedia enterprise network. Nortel's powerful Magellan Passport model 160 is the optimal solution.

The Magellan Passport solution

The Magellan Passport model 160 currently supports the Asynchronous Transfer Mode (ATM) services and network consolidation requirements of customers around the world.

Designed to deliver the best features and functionality of routers, packet switches, and muxes, Magellan Passport is a modular, cell-based enterprise switch using ATM technology. It delivers a powerful range of standards-based interfaces and services, provides high-performance multiprotocol routing, and simultaneously supports voice, data, video, and image traffic. Intelligent traffic management capabilities allow organizations to achieve efficient communication and network consolidation for all organizations.

Unparalleled performance and availability

Delivering high availability, fast response time and 1.6 Gbit/s performance, the Magellan Passport supports the demanding communications needs of today's enterprises. Passport dynamically routes service along the optimal path, allowing faulty or congested links to be bypassed and network efficiency to be maximized. Passport features Nortel's unique Multiple Priority System for dynamic management of different traffic types and the allocation of network resources based on application needs and business priorities. High availability and performance are achieved with features such as hardware redundancy, trunk backup capabilities, and redundant power and processor configurations.

Flexibility

Optimized with more interface slots than the smaller Passport model 50 switch, the Passport model 160 - with 16 slots available - is ideal for a high-performance enterprise backbone network or carrier network. Both Passport switches feature modular, scalable hardware and software services to accommodate a variety of site and size requirements. Passport networks scale easily from a few nodes to thousands of nodes.

Cost savings

Passport model 160 offers substantial network savings by simplifying the network infrastructure and maximizing bandwidth efficiency. Backbone-level network consolidation leads to significant facilities savings by reducing the number of leased lines required. Capital cost savings are derived from the efficient use of existing equipment and reduced hardware requirements as the network grows.

Leadership

Passport's state-of-the-art technology has gained international recognition through awards from both trade journals and trade organizations - and through the satisfaction of our

customers worldwide. Passport leads the industry with such service offerings as voice over ATM - delivering cost savings and new revenue potential for Magellan customers. Passport frame relay is deployed by service providers around the globe and leads the market with switched virtual circuit and broadband UNI capabilities.

Path to the future

Magellan Passport is designed to be compatible with emerging technologies. For example, an ATM service can be added by simply including an ATM interface card and provisioning it with the appropriate software.

Magellan portfolio of broadband multimedia products

In addition to Passport, Nortel's Magellan portfolio of broadband multimedia products includes Vector, Concorde, DPN-100, data and integrated voice/data access products, and the comprehensive network management system.

Specifications

Model 160 (GIF 71040 bytes)

InterLAN switching

- network protocols including TCP/IP, Novell IPX
- bridging support including transparent bridging, source route bridging, source route transparent IEEE 802.9, FDDI encapsulation
- routing techniques including RIP, EGP, and OSPF
- security - advanced filtering facility
- RFC 1483 LAN over ATM

APPN support

- network node
- dependent LU requester (DLUR)
- high-performance routing

ATM

- high-performance virtual channel and virtual path ATM switching
- ATM trunking
- ATM UNI access (ATM Forum 3.0/3.1 compliant)
- adaptation of all Passport-supported services to ATM
- wide range of TM physical-layer interfaces
- traffic policing and shaping

Voice networking protocols

- QSIG - ECMA on E1/DS1
- NIS (North American ISDN)
- CAS (DTMF inband signalling and TTC-2M)

Voice networking capabilities

- ADPCM compression
- built-in echo cancellation with fax and modem tone detection
- activity detection for speech and fax
- automatic voice/data call discrimination

Transparent data support

- frame-aligned bit transparent connection
- HDLC transparent connection

Frame relay

- switched virtual circuits
- frame relay accounting
- frame relay-ATM interworking

Trunking

- 9.6 kbit/s to 155 Mbit/s (OC-3c)

Robust routing

- multiple routing systems are supported simultaneously:
- LAN protocols and legacy data use a dynamic packet routing system
- voice and transparent data use a connection-oriented routing system

Physical interfaces

- V.11 (X.21), V.35
- DS1, E1 channelized and unchannelized
- DS1, E1, TTC-2M voice
- DS3, E3, DS3 channelized
- HSSI
- FDDI
- ethernet, token ring
- DS1, E1 ATM
- DS3, E3 ATM
- OC-3c, STM-1 ATM
- J2 ATM
- combined control, ethernet/token ring and V.11/V.35

Network management

- SNMP-compliant device management
- Magellan Network Management System
- Magellan OMS-HP OpenView, IBM NetView/AIX, Cabletron Spectrum

Packaging

- complete shelf (h x w x d) unit 38.25" x 19" x 21.75" 972 mm x 483 mm x 553 mm
- cabinet (h x w x d) 77.5" x 24" x 27.3" 1969 mm x 610 mm x 693 mm
- mounting options: - Nortel supplied cabinet - standard 19" EIA rack

Electrical requirements

- AC and DC models are available with optional redundancy

For additional information on Magellan services and products, please contact your Nortel account representative.

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Magellan Passport Model 50

Cost-Effective, High-Performance Networking - in a Compact Package

Passport Model 50 Highlights

Magellan Passport is an ATM-based enterprise switch which provides:

- consolidation of data services including LANs, SNA/APPN, with ATM, voice, video onto a single network
- high-performance frame relay
- ATM access & trunking capability
- sophisticated traffic management
- unmatched network availability
- powerful, flexible network management system

Model 50 (GIF 51351 bytes)

Facing increasing traffic demands and the high cost of networking, businesses need a cost-effective, high-performance solution for their small-to-medium size locations. These sites - while small - require a comprehensive set of services and interfaces consolidated into a single network. They require a solution that offers dynamic bandwidth management to meet today's multimedia needs-a more flexible and cost-effective solution than traditional TDM muxes. Nortel's Magellan Passport model 50 is the ideal solution.

The Magellan Passport solution

Nortel's Passport model 50 currently supports the ATM services and network consolidation requirements of customers around the world. It is a modular, cell-based switch that provides cost-effective, high-performance networking in a compact package. The fully-featured Passport model 50 brings unmatched availability and the power of enterprise networking to locations where a small number of interfaces are required. Whether deployed by an enterprise

or by a carrier to serve the needs of an enterprise, Passport delivers the right balance of price and performance - backed by the built-in reliability, manageability, and investment protection of the Magellan portfolio of products.

Flexibility

The modular design of the Passport model 50 shares the hardware and software architecture of the larger Passport model 160. Suitable for corporate and service provider networks, the Passport model 50 can meet varied customer requirements. Compact in size with five slots and a 1.6 Gbit/s back-plane, it has the flexibility and high-performance of the larger model 160. Passport provides a wide mix of standards-based interfaces and services, and also supports multi-protocol routing with simultaneous support for voice, data, video and image traffic. Passport uses Magellan's Multiple Priority System, which provides priority, loss and delay parameters to closely align communications capabilities with application needs and business priorities. Bandwidth is dynamically allocated to all active applications based on these parameters to effectively maintain the quality and performance of sensitive traffic such as voice and video while maximizing network bandwidth efficiency. Passport networks scale easily from a few nodes to thousands of nodes.

Cost savings

The combination of the Multiple Priority System with sophisticated traffic management capabilities delivers reduced networking costs for Passport users. Independent applications networks are consolidated into one physical, and many logical, networks - each with unique and tailored control and performance attributes. The Passport model 50 also provides statistics and accounting information for carrier billing or for encouraging efficient use of the corporate network.

Leadership

Passport's state-of-the-art ATM technology has gained international recognition through awards from both trade journals and trade organizations - and through the satisfaction of our carrier and enterprise customers worldwide. Passport leads the industry with such service offerings as voice over ATM - delivering cost savings and new revenue potential for Magellan customers. Passport frame relay is deployed by service providers around the globe and leads the market with switched virtual circuit and broadband UNI capabilities. Passport's full range of services and interfaces are available today and thousands of Passport switches have been deployed worldwide.

Magellan portfolio of broadband multimedia products

In addition to Passport, Nortel's Magellan portfolio of broadband multimedia products includes Vector, Concorde, DPN-100, data and integrated voice/data access products, and the comprehensive network management system sheet data sheet

Specifications

Model 50 (GIF 65408 bytes)

InterLAN switching

- network protocols including TCP/IP, Novell IPX
- bridging support including transparent bridging, source route bridging, source route transparent IEEE 802.9, FDDI encapsulation
- routing techniques including RIP, EGP, and OSPF
- security - advanced filtering facility
- RFC 1483 LAN over ATM

APPN support

- Network node
- dependent LU requestor (DLUR)
- high-performance routing

ATM

- high-performance virtual channel and virtual path ATM switching
- ATM trunking
- ATM UNI access (ATM Forum 3.0/3.1 compliant)
- adaptation of all Passport-supported services to ATM
- wide range of ATM physical-layer interfaces
- traffic policing and shaping

Voice networking protocols

- QSIG - ECMA on EI/DSI
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- CAS (DTMF inband signalling and TTC-2M)

Voice networking capabilities

- ADPCM compression

- built-in echo cancellation with fax and modem tone detection
- activity detection for speech and fax
- automatic voice/data call discrimination

Transparent data support

- frame-aligned bit transparent connection
- HDLC transparent connection

Frame relay

- high-density, high-speed interfaces
- differentiated traffic class management
- switched virtual circuits
- frame relay accounting
- frame relay-ATM interworking

Trunking

- 9.6 kbit/s to 155 Mbit/s (OC-3c)

Robust routing

- multiple routing systems are supported simultaneously
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- DS1, E1 ATM
- DS3, E3 ATM
- OC-3c, STM-1 ATM
- J2 ATM
- combined control, ethernet/token ring and V.11/V.35

Network management

- SNMP-compliant device management
- Magellan Network Management System
- Magellan OMS-HP OpenView, IBM NetView/AIX, Cabletron Spectrum

Packaging

- size (h x w x d) 17.5" x 10.5" x 22.0" 445 mm x 267 mm x 559 mm
- mounting options: - Nortel supplied cabinet - standard 19" EIA rack

Electrical requirements

- AC and DC models are available with optional redundancy

For additional information on Magellan services and products, please contact your Nortel account representative.

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Magellan DPN-100 for Data Networking Solutions

The enterprise data networking goal is clear.

It is a unified, highly reliable and cost efficient networking environment. It is a network that is easy to manage, change and grow as it adapts to meet new business applications and challenges. And it provides the freedom to use whatever data processing platform an organization might choose, while protecting existing data networking investments.

It is a clear goal, but one that few vendors can deliver.

The Business Challenge

In industries where the flow of information is critical to the operation of the business, the data network infrastructure is rightly regarded as one of the most strategic assets of an organization. In making the most of these strategic assets, network operators face many challenges in meeting the escalating demands of their users.

Cost pressures

Network operators are under increasing pressure to reduce operating and facility costs. At the same time, they must ensure the networking infrastructure will support the growing traffic demands of network users.

Independence

Decisions concerning data processing applications and platforms should reflect the business objectives of an organization, rather than the inherent limitations of its proprietary or specialized data network. In order to achieve this, it must be possible to make decisions about applications platforms independently of the network infrastructure.

High availability

Networks must be inherently reliable and available. If a critical network goes down, the impact upon revenues and productivity can be catastrophic. The organization increasingly depends on the network's ability to deliver network traffic to end users, on time all the time.

Smooth evolution and growth

Finally, today's networks need to be designed to meet the challenges of tomorrow. They must be capable of growing dynamically to meet changing business needs, and evolve to encompass new technologies. Networks must be able to handle growth and change without affecting the network availability to other users.

These are the business challenges for today's data networks.

Responding to the Challenge

As part of the Magellan family, DPN-100 is a frame switching based enterprise data network. Its standards based architecture supports a wide range of computing equipment and applications. With DPN-100 you can consolidate multiple proprietary networks into a unified, networking environment.

Its robust architecture allows you to deliver unparalleled user availability 24 hours, 7 days a week.

The Magellan DPN-100 Advantage

With three generations of DPN product development and over 15 years of experience in designing and building DPN-100 data networks for organizations world-wide, Northern Telecom is recognised as the global leader in packet and frame switching technology. The reasons for this are clear.

Cost savings through network consolidation

With DPN-100, substantial cost benefits can be gained from consolidating multiple discreet networks into a single, enterprise-wide data network. The DPN-100 network also minimises the total bandwidth requirement by dynamically sharing bandwidth among applications. Along with the efficient frame-based trunking, this dynamic sharing translates directly into savings on expensive facilities such as line costs.

While multiple applications networks require a substantial commitment of skilled personnel, a unified DPN-100 data communications networking and integrated network management environment requires a much smaller resource commitment. This frees up valuable technical resources to spend more time attending to the needs of users, rather than the day to day maintenance of the network.

Smooth growth and evolution

The inherent scalability of the DPN-100 architecture allows for virtually unlimited growth of an organization's data network. There are only a few basic modules used to build DPN-100 networks. They can be upgraded in small, modular increments. Network changes and the incorporation of new technologies can be accommodated easily and smoothly without disruption to the rest of the network. This means that organizations can achieve a long

network life and an exact fit to meet their present needs, rather than having to deliberately over-engineer the network to meet future requirements.

Independent networking

With the DPN-100 network, applications and applications platforms can be added without building a new networking infrastructure. The independence given by the DPN-100 network is based on support for a wide range of international, de facto and industry standards and protocols. It reflects Northern Telecom's leadership role in the development of standards as well as a continuing commitment to emerging standards. It means that Northern Telecom's customers are consistently among the first to benefit from new developments in open systems networking.

Maximum network availability to users

Users testify to the proven reliability of the DPN-100 solution. With availability of up to 99.999%, DPN-100 provides a network infrastructure that meets the availability requirements insisted upon by demanding users such as banks, airlines and the military.

This high availability reflects DPN-100's fault tolerant hardware and software architecture. Its modularity means that upgrades can take place dynamically without disrupting the network availability to other users. DPN-100 has an extensive range of networking features which can deliver this high reliability, including: instantaneous non-disruptive rerouting around failures, call redirection, hunt groups, and automatic dial backup. Meanwhile, the redundancy of key components means that the DPN-100 network will always be there when it is needed.

Enhanced SNA networking

DPN-100 provides an effective set of capabilities to enhance both the performance and availability of an SNA-based network. Innovative networking solutions using DPN-100 can improve the response time, optimize backbone traffic and allow significant cost reduction or avoidance in connecting both the data center and the business office.

DPN-100's robust network services allow comprehensive, low cost, disaster recovery and backup plans to be implemented that allow mission critical applications to remain online. The dynamic routing capabilities ensure maximum uptime for users while minimising the investment in redundancy.

LAN interconnection

DPN-100 offers a variety of services for LAN interconnection including token ring, ethernet, X.25 and frame relay.

Connecting LAN routers through DPN-100's superior implementation of frame relay has several benefits. DPN-100's comprehensive congestion management and avoidance techniques ensure high quality of service, performance and throughput for LAN traffic. For large router

networks DPN-100 allows simplification of network administration and management. It does this by providing a virtual mesh topology for router networks using a single connection.

Northern Telecom's DPN-100 ISRB service provides wide area connectivity to token ring local area networks, allowing geographically remote, isolated token ring LANs to be interconnected. For SNA networks, DPN-100 ISRBs can connect downstream physical units to the front end processors and provide peer-to-peer communication between APPN nodes or front end processors. For non-SNA networks, DPN ISRBs can be used for connecting servers and workstations in popular LAN operating systems such as Novell NetWare or IBM NetBIOS. Through the integration of source routing and DPN-100 routing, the effective transport of interLAN traffic is achieved over the common backbone.

The DPN-100 ethernet routing service will provide wide area connectivity for Ethernet LANs, and include comprehensive protocol support for TCP/IP, IPX, DECnet, Appletalk, OSI, XNS and Banyan Vines. Additionally it also supports both transparent and spanning tree bridging. Interoperability with other routers is assured through strong adherence to industry LAN interconnection standards.

Northern Telecom's broad experience in multiprotocol networking has been used in designing a comprehensive congestion control mechanism to ensure that LAN traffic receives a controlled amount of network resources. Combining the intelligent networking benefits of DPN-100 such as bandwidth efficiency, dynamic routing, access consolidation, shared bandwidth and efficient broadcast, with the capabilities of routers and bridges, DPN-100 provides superior LAN interconnection services to conventional approaches.

Intelligent networking

In addition to the traditional networking capabilities, DPN-100 provides several important advantages. It provides a comprehensive range of features that provide security and facilitate ease of use. The security features include closed user groups (CUG), network user identifiers (NUI), hunt groups, operator security features, gateway access management and address validation, dial access control, and validation of the calling address.

In addition, DPN-100's broadcast feature enables users to send a single message to multiple destinations for reduced host processing and more efficient use of network resources. DPN-100's virtual private networking (VPN) features allow organisations to segment the network, each with individualized network management capabilities. By segmenting its network through VPN, an organization will be able to offer different levels of network autonomy to various groups within its organization. A corporation for example, who wants to resell its network can partition the network through the VPN feature and give network management control to different network users.

Open Networking

With a strong history of participation and support in the development of CCITT, industry and

telecommunications and data communications standards and has been a leading founder of both the frame relay and ATM forums. Taking advantage of this experience, DPN-100 is able to communicate with a diverse range of terminal and host equipment, protecting user investments in existing hardware and software products and facilitating the transition to new solutions.

DPN-100 Success Stories

In more than 65 countries on six continents, DPN-100 networks serve a diverse mix of organizations and industries. Many of these networks interconnect the global operations of large corporations and support a range of host and end-user environments. Examples of these successes are in the areas of transportation, banking and finance, public services and government.

In transportation

Airlines around the world use DPN-100 networks to support many applications including reservations and flight scheduling information. One of the world's largest airlines, for example, uses DPN-100 to connect some 70,000 employees, track over 8,500 items on each airplane, maintain an inventory of 300 million spare parts and create 500,000 new passenger records each day. In another case, the DPN-100 serves a network of 20,000 devices to manage flight reservations, cargo and baggage and provide access to a large SNA mainframe.

Keeping SNA flying

When a leading global airline acquired two other airlines it naturally wanted to consolidate their three SNA networks into a single enterprise network. The company wanted to preserve the integrity of each computing infrastructure and allow the interconnection of users across the new networking environment. By using DPN-100's SNA LU (Logical Unit) Multiplexing capability, network users are now able to access hosts easily and quickly across all the three organizations. The result is a substantial cost saving gained while maintaining the value of the investment in the SNA host environment. It has also provided a common, streamlined environment for network management and administration.

Distributing to the world

One of the world's largest air and ground package distribution company, with more than 2,000 offices in over 80 countries, installed a

DPN-100 network to interconnect diverse host, application and end user environments. Users can be connected to any application, wherever it resides globally. More than 40,000 individuals access 25,000 terminals daily to track package shipments, check status and deliveries.

In banking and finance

Virtually every bank in the world relies daily on DPN-100 networks, moving trillions of dollars around the globe. These networks support a wide range of banking applications including teller and banking machine networks, interbank transfers, corporate services, access to customer information and administration. For these financial institutions DPN-100 cuts costs, improves availability and response times, and provides the flexibility to handle many protocols and applications, including SNA.

Migrating to an APPN future

Many organizations are migrating their traditional mainframe architectures to the newer breed of distributed environments. Often, this can involve a radical upheaval of the network. A large international bank recently avoided this, thanks to DPN-100. In particular, full support was provided for the organization's existing IBM requirements, as well as its evolving APPN environments, with DPN-100's type 2.1 router feature. Because the DPN-100 solution can take on the functionality of the APPN network nodes, existing IBM AS/400s could be refocused on applications rather than networking tasks.

Banking on frame relay

The recent growth of a major savings bank resulted in an estimated 30% increase in data traffic. The existing DPN-100 network was easily upgraded with DPN-100 frame relay to give the bank the performance, cost effectiveness, quality of service and, above all, reliability it required. In addition, Northern Telecom's frame relay solution worked effectively with the existing DPN-100 services including X.25 and IBM SNA for batch file transfer and simultaneous transaction processing between the bank sites. The bank was particularly impressed by the way DPN-100 frame relay performed in an SNA environment under high traffic situations.

Integration

DPN-100 is a member of Northern Telecom's Magellan family of global enterprise networking and broadband products and services. The family also consists of Passport which offers the benefits of both cell and frame switching within a single architecture, a portfolio of access products together with a comprehensive and unified network management system. Northern Telecom supports the family with an extensive range of support services.

The range of network performance and platform sizes that the Magellan family can provide is matched only by the variety of traffic types that can be integrated within a single network architecture.

The addition of Passport within a DPN-100 networking environment provides the most comprehensive capabilities for data driven multimedia enterprise networks available in the marketplace. The combination of DPN-100 and Passport facilitates the smooth evolution of applications toward multimedia and ATM environments.

Comprehensive network management

The Magellan Network Management System (NMS) provides superior capability in all five OSI functional areas:

- **fault management** uses a graphical user interface and has an expert system for easier, faster trouble shooting
- **configuration management** offers forms-based provisioning while facilitating reporting and custom applications
- **performance management** tools allow for customized reports of an extensive array of network data such as statistics and alarms. Simulation planning tools allow engineers to optimize network hardware components for optimum traffic performance
- **accounting management** enables the generation of an extensive suite of accounting records that can be used for accurate chargebacks and billing
- **security management** provides security for network operations and for the users on the network with sophisticated features such as closed user groups, and network user identifiers

NMS supports virtual private networking with customer network management, for the full range of network configurations.

Magellan NMS also supports interworking both to umbrella management systems and to manage non-Magellan devices. Magellan NMS supports OSI, SNMP and IBM's NetView system as well as its own published interfaces.

A distributed architecture gives NMS the flexibility to fit well into any customer operations environment, whether it is centralized or distributed. It is robust and provides excellent performance largely because network management messaging does not have to route through a single, centralized station.

Support

Supporting your enterprise data network

Northern Telecom is justly proud of its reputation for providing industry leading customer services: drawing on our unrivalled experience in designing, installing, project managing and supporting some of the world's most demanding networks.

With equipment designed, manufactured and supported by Northern Telecom, organizations can have complete faith in their network. Employing more than 50,000 people, the company is

recognized as the global leader of fully digital telecommunications switching systems, providing products and services to telecommunications operating companies, corporations, governments, universities and other institutions worldwide.

Northern Telecom customers are supported by one of the world's largest research organisations, Bell Northern Research (BNR). BNR, a subsidiary of Northern Telecom employs more than 8,000 scientists and engineers throughout the world.

Together, these employees ensure that all Northern Telecom products meet the needs of customers today, and the technological requirements of tomorrow.

DPN-100 will help you reach your goal of a unified, highly reliable and cost efficient networking environment at the same time protecting your existing investments in computing equipment. It will grow smoothly with you and your organization's data networking needs. DPN-100 is Northern Telecom's proven solution to enterprise data networking.

Specifications

Access speeds and trunking

- access speeds from 300 bps to T1/E1 and trunking speeds from 4800 bps to T1/E1 speeds
- support for both terrestrial and satellite trunking

Features and options

- *CCITT Network wide features and options*
  - Closed user groups (CUG)
  - Network user identifier (NUI)
  - Hunt groups
  - Call redirection
  - Class of service priorities
  - Access gateways
  - Broadcast features
- *Addressing features and options*
  - X.121 and E.164 support
  - shared DNIC routing
  - PNIC routing
  - RPOA
  - Mnemonic addressing
  - Sub-addressing
  - Flexible address assignment
  - Address translation

- *Access service features and options*
  - Switched virtual circuit (SVC)
  - Permanent virtual circuit (PVC)
  - Direct calls
  - Fast select
  - Multiple national languages
  - Information gateway access

- Accounting features and options
  - Detailed accounting
  - Reverse charge and acceptance
  - Time of day accounting
  - Single ended reporting
  - Automatic message accounting

CCITT Protocol support

- X.25 and X.25 gateway
- X.75/X.75'
- X.3/X.28/X.29
- X.32
- X.31 (ISDN)

Frame relay support and services

- fully standards compliant UNI and NNI
- LMI with async status reporting
- fast forward CIR and EIR
- FECN/BECN and DE-bit congestion management with network significance

value added frame relay features

- automatic CIR flow control
- 99.994% network PVC availability
- network class of service options
- access class of service options
- comprehensive quality of service management capability

LAN Interconnection protocol support

- token ring ISRB (intelligent source routing bridge)
- ethernet routing TCP/IP, IPX, DECnet, Appletalk, OSI, XNS, and Banyan Vines.

IBM protocol support

- SNA Data Link Routing Services include:

- SDLC
  -all PU types
  -full/half duplex link station support
  -group poll
  -multipoint (physical/virtual)
  -NRZI

- Token Ring
  -LLC2 termination
  -all PU types

- SNA over Async

APPN Routing

- T2.1 Router
  -SDLC, TRN, Dependent LU Support
  -APPN NN

- LU Switching service
  -Multi Host service
  -Multiplexing

- Bisynchronous Service
  -3270 DSP
  -3780

Other Protocols

- transparent HDLC
- asynchronous polling interface for point-of-sale terminals using asynchronous poll-select block mode
- protocols supporting the global banking industry
- protocols supporting the global air-line industry

Environmental Specifications

Temperature:
Operating: 10 C to 40 C
Storage: -40 C to 70 C

Relative humidity:
Operating: 20% to 80% non-condensing
Storage: 10% to 80% non-condensing

Safety:

DPN-100 products are UL listed, CSA certified, and compliant with IEC950 and UL1950

EMI compliance:

- Complies to FCC Rules Part 15 Subpart J for Class A systems.
- Meets Canadian Standards Association (CSA) C108 Class A.
- Complies with CISPR 22 Class A

Supply voltage

The DPN-100 product family supports both AC and DC power supplies

DPN-100 product summary

Product	Packaging	Max. No Lines
DPN-100/1	desktop	10
DPN-100/3	tower/rackmount/desktop	32
DPN-100 Cabinet	cabinet	32-5000

Return to Magellan Home Page.

ENTERPRISE NETWORKS NORTEL HOME INDEX, SEARCH & SOLUTION FINDER COMMENTS & QUESTIONS

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NORTEL
NORTHERN TELECOM

Enterprise Networks News Releases

May 6, 1997

Contact:

Laura Teder
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972-684-8721
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Nortel (Northern Telecom) Introduces the Magellan Passport 30 a Powerful Solution to Lowering the Entry Cost for ATM Networking

Nortel Targets the Branch/Remote Office for Networking

LAS VEGAS -- Nortel (Northern Telecom), the market leader in asynchronous transfer mode (ATM) enterprise switches, today introduced the newest member of its ATM enterprise network switch family, the Magellan Passport model 30. At the heart of the Magellan Passport model 30 is a new function processor designed to lower the cost of ownership and enhance the benefits of the recognized industry-leading Magellan Passport ATM enterprise network switch. This brings new wide-area-networking capability to the branch or regional office of enterprises.

The new function processor delivers multiple economical solutions for corporate networking while maintaining the feature rich functionality that has fueled the more than 5,000 Magellan Passport nodes sold to both the enterprise and service provider markets. The function processor makes the Magellan Passport 30 ideal for large branch or regional sites to consolidate multiple applications including LAN interconnect, voice and video. Its single, integrated solution allows customers to save nearly a third off the individually priced components. Since it shares common components and features such as voice networking with its larger family members, the Magellan Passport 30 is a complementary addition to a Magellan Passport backbone network.

The new function processor enables an improved entry-level configuration of the Nortel Magellan 50. This combination is ideal for smaller network locations requiring a scaleable, flexible solution that can grow as new applications, such as ATM, are added.

"Many of our remote offices couldn't justify the placement of a Magellan Passport node, so we back-hauled the traffic to the nearest Passport 160 in the network," said Humberto Pina, senior analyst, Communications Architecture, Florida Power and Light. "The Magellan

Passport 50, equipped with an integrated function processor, brings the flexibility of Magellan Passport down to a smaller level. Magellan Passport's effective bandwidth management eliminates multiple network architectures and offers us the flexibility to add new applications as our business grows."

"Depending upon the scope of the application, the Magellan Passport 30 is an ideal solution for our Cell Transfer Mode (CTM) managed service offering to customers of the Westinghouse Network," said Tom Shimko, vice president, marketing, Westinghouse Communications. "The new switch is equipped with the same functionality as our larger Magellan Passport nodes, enabling seamless service from the central office to customer premises. This solution allows us to offer one of the most competitive network consolidation solutions in the market today."

"In talking with our customers, we realized that smaller packaging without forfeiting our modular architecture and the robust features of our enterprise network switch was the critical objective we had to achieve," said Mark Tharby, group director, marketing, Magellan Networks, Nortel. "We are offering this solution in several cost effective configurations to give our customers the greatest flexibility."

The Magellan Passport 50 with the integrated function processor is planned for June availability, with a list price of under $20,000. The Magellan Passport 30, currently in customer trials, is scheduled for availability in July.

As reported in the recent Yankee Group market analysis report on data communications, Nortel ranks number one in the 1996 Worldwide ATM enterprise switch market, with a leading 46 percent market share, driven by the Magellan Passport enterprise network switch.

Nortel's Enterprise Networks builds networks that power businesses worldwide. These networks and high-capacity, digital communications technology to customer needs through the integration of products and services, including Meridian and Norstar digital switching systems; Nortel's multimedia applications portfolio; Rapport Internet and intranet access and security products; Magellan wide area networking systems; and a portfolio of consumer products.

Nortel works with customers worldwide to design, build, and integrate digital networks -- for government, education, and business -- offering one of the broadest choices of network solutions in the industry.

Nortel had 1996 revenues of $US 12.8 billion and has approximately 68,000 employees worldwide.

norstar

NORTEL
NORTHERN TELECOM

Product Bulletin

Number: CALA-111-MB

Date: April, 1997

Norstar Compact ICS Availability

Nortel CALA is pleased to announce the introduction of the Norstar Compact ICS. The Norstar Compact ICS is an extension of the Norstar-Plus family. Norstar is now growing to meet and exceed the needs and demands of our customers now and into the future.

You should already have received your Channel Introduction Package, otherwise please contact Claudia Joannou, Marketing Communications, at (954) 851-8488 for additional copies. A marketing brochure, in English, as well as a technical training video is also orderable through the Marketing Communications group; please refer to the documentation section of your price manual.

The Compact ICS can be ordered as of April 15, 1997. Ordering codes and prices are contained within the Enterprise Networks April edition of the price manual.

The Compact ICS 220v product is orderable, however product will not be available for shipping until the last week of May, 1997.

The Compact ICS was designed to replace the existing Compact 6X16, therefore, we would like to take this opportunity to announce the market discontinuation of the Compact 6X16 as of June 30, 1997. A product bulletin is currently being issued detailing product retirement of the 6X16.

Please see your Compact ICS Channel Introduction Package for further, more specific details of the hardware and software of the Compact ICS.

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NORTEL
NORTHERN TELECOM

Sales and Marketing Bulletin

Number: CALA-112-MB
Date: May 1997

Market Availability of Analog Station Module

Nortel CALA is pleased to announce the availability of the Norstar Analog Station Module (ASM) as of May 14, 1997. The Norstar ASM is an extension of the Norstar-Plus family. Norstar is growing to meet and exceed the needs and demands of our customers now and into the future.

The Analog Station Module responds to the continuing demand for analog connectivity for a wide range of data devices, most notably low cost FAX modems which have become a standard accessory in the PC market.

The ASM is a significantly enhanced analog interface device for the Norstar-PLUS Modular Integrated Communications System (Modular ICS or 0x32). The Analog Station Module is an 8-port device which provides connectivity to analog data equipment such as FAX machines, FAX Modems, and Credit Card Verification devices, as well as analog voice equipment including 2500 telephone sets, cordless phones and answering machines.

This product is available in two configurations: the standard Analog Station Module (ASM) which will support the connection of analog devices, and the Analog Station Module with Visual Message Waiting Indication (ASMV) which will support the connection of analog devices and will provide message waiting indication to appropriately equipped telephones.

The Analog Station Module may only be connected to the Norstar-PLUS Modular ICS.

Updated price manuals with Analog Station Module pricing information have been forwarded to your Account Executives. Please contact them directly for pricing information.

If you have any questions or comments, or require further information, please contact:

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NORTEL
NORTHERN TELECOM

Sales and Marketing Bulletin

Number: CALA-113-MB
Date: May 1997

Soft Key Codes For Compact ICS

Two "Soft Key Codes" are available in the price manual for the Norstar-PLUS Compact ICS . They are Soft Key 4x8 Access, and Internal Remote Access Soft Key Upgrade.

The 8 to 16 stations key code allows you to upgrade your Norstar-PLUS Compact ICS system from 8 stations to 16 stations if you have purchased 4x8 software. The new stations that are being enabled already reside in the KSU, therefore, no hardware purchase is necessary for the upgrade. The 4x16 software comes with all 16 ports enabled, and therefore, only requires hardware for growth.

The second soft key, enables you to "turn on" the Internal Remote Access Device. This device allows the distributor to access the end user system from a remote location in order to provide remote maintenance. One must take into account that these key codes are NOT subject to any type of discount from the customer list price manual.

In order to purchase the above mentioned key codes, these are the descriptions and CPC codes that will need to be entered in the P.O. Also note that the original codes provided have been uspissued, please utilize new CPC's upon ordering soft keys for the systems.

Description	OLD CPC	NEW CPC/ENG CODE
Soft Key 4x8 Access, 8 to 16 Station Upgrade	P0840065	A0659207 / NTAB2000
Soft Key to enable the Internal Remote Access	P0835228	A0659208 / NTAB2001

Please provide system ID for both/either key code

If you have any questions [illegible] information, please contact:

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NORTEL

A World of Networks

Product Bulletin

Number: CALA-071-PB
Date: April 1997

Market Retirement Notice for the Compact 6x16

In accordance with the Customer Premises Equipment Distributor Agreement, this letter constitutes notification of the Market Retirement of the Norstar Compact. These products shall be market retired effective **June 30, 1997**. After this date orders will be filled only until stocks existing at that time are depleted to zero.

Please refer to the Distribution Agreement for specific terms and conditions of this support policy.

The specific product codes retired by this Notice are as follows:

A0399460 Compact KSU (6X16), 110v Disconnect Supervision
A0401708 Compact KSU (6x16), 220v Disconnect Supervision
A0401705 Compact KSU (6x16, 48v Disconnect Supervision
A0393216 Compact DR5 SW (Replaced with DR5.1)
A0402097 Compact DR5 SW (Replaced with DR5.1)
A0402099 Compact DR5 SW (Replaced with DR5.1)

Current DR5.1 Levels of Software are still available for the Compact 6X16 and Modular 8X24 for installed base activities.

This retirement action is being taken in response to market demands for the greatly enhanced features and functionality provided to customers through the Norstar-PLUS Compact. These products provide scalability from a 4X16 configuration (or a 4X8 configuration for price sensitive customers) to growth up to 272 ports on the Modular ICS (0X32) with an unprecedented level of investment protection and flexibility. In addition, the Norstar-PLUS Compact ICS and Modular ICS provide today's customers with a platform to take them into the future. For example, both these platforms are ISDN ready today and will deliver ISDN BRI functionality during 1997. The 3X8 DR5 KSU will remain in the Norstar Product Portfolio for customers with no growth requirements but who still want the ease of use and functionality that Norstar provides.

If you have any questions or comments, please contact:

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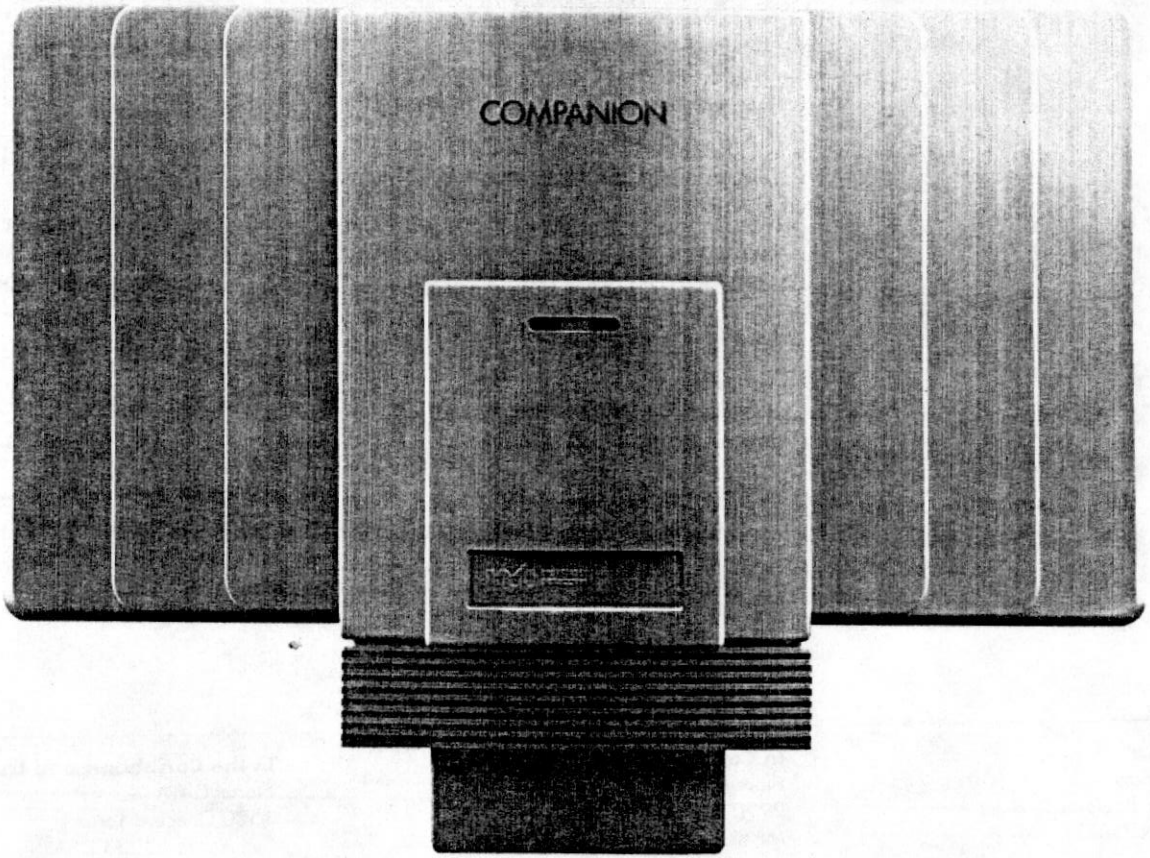
COMPANION Base Station

COMPANION Base Stations provide the radio link for the COMPANION Wireless Communications System for Business.

The Base Stations are mounted on walls or ceilings throughout a building. They send and receive calls between the portable telephones and the Controller.

As you talk, your conversation is picked up by a Base Station and as you move, it hands the call to another Base Station in the system. This ensures the highest quality audio for your conversation while you move.

Installation is simple as the Base Stations require ordinary telephone wiring to connect with the Controller.



COMPANION
Base Station

NORTEL
NORTHERN TELECOM

Each COMPANION Base Station supports two simultaneous calls and depending on traffic requirements, one to four Base Stations can be grouped together to form a cell.

The digital voice quality of the COMPANION system is enhanced by antenna diversity. This means that, as people move, the Base Station samples the reception on its antennae and continually switches to the one with the best reception.

By adding optional external antennae, coverage can be extended outside a building.

As the number of users or coverage area increases, more Base Stations can be added. This means growth is modular and cost effective.

The advanced digital radio means superior voice quality with no interference or eavesdropping.

Design Summary

Cell Radius
- In a building: 65-230 ft. depending on building construction
- Open environment: up to 650 ft.

Distance from Controller
- 3900 ft. with twisted pair 24AWG wiring

Base Station Traffic Capacity
- 2 simultaneous calls (2 channels)

Cell Traffic Capacity
- 2-8 channels or 1-4 Base Stations

Antenna
- Internal: dual antennae for each radio (antenna diversity)
- External: optional for outdoor coverage or directional coverage indoors

Installation
- Mounted on ceiling or wall with supplied bracket

Power
- Remote power through twisted pair 48V DC
- Local power plug-in 110V AC transformer

Operation
- Type approved, radio licence not required

Weight
- 1.8 lbs

Dimensions
- 8 x 12 x 2 in.

Color
- Dolphin gray

Operating Temperature
- 32°F to 104°F

Storage Temperature
- -13°F to 158°F

Radio Protocol
- Personal Communication Interface (PCI)
- 1.92 GHz-1.93 GHz
- Dedicated frequency for unlicenced PCS
- 99 voice channels
- Frequency Division Multiple Access (FDMA)/Time Division Duplex (TDD)
- 100 kHz channel spacing
- 32 kbits/sec Adaptive Differential Pulse Code Modulation (ADPCM) speech coding
- Dynamic Channel Selection
- Radio Frequency (RF) Output Power – 32 mW Effective Radiated Power (ERP) maximum

In the U.S.A.:
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Richardson, TX 75082

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In Canada:
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Mexico (525) 325-2100
Brazil (55) (11) 841-8677

Internet: http://www.nortel.com

Ordering Number: P0809840 Issue 02
April 1996

COMPANION C3020 Portable Telephone

The COMPANION C3020 is a compact, portable telephone that can be opened with the push of one button.

When used with the COMPANION Wireless Business Communications System in a building, it enables people to make and receive calls anywhere on the premises.

Function keys provide quick access to features and the large two-line alphanumeric display shows the name and the number of the person or company calling when system is working with Meridian COMPANION or the C200 behind Centrex is used.

The C3020 Portable Telephone can have its own number. Or, it can share the same telephone number with a desk telephone, so that when a call comes in, both phones will ring. People can start a conversation on one phone and easily switch to the other.

COMPANION C3020
Portable Telephone

NORTEL

The COMPANION C3020 Portable Telephone supports a wide range of time-saving and convenient features such as:

- Calling Party Name Display (CPND)
- Call Line Identification (CLID)
- Visual Message Waiting Indicator (VMWI)
- Call Transfer
- Call forward
- Conferencing

Digital performance means the C3020 provides superior voice quality, with no interference or eavesdropping.

To deter unauthorized use, people can lock their portable telephones with their own password.

Low Power consumption means the C3020 has long battery life and will easily make it through a normal working day before requiring recharging.

Design Summary

Display
- 2 line Liquid Crystal Display (LCD) with status icons

Power Source
- 3 AAA batteries (alkaline or rechargeable nickel cadmium)
- Optional recharger with rechargeable nickel cadmium battery pack (1-2 hour charging time)

Power Consumption
- Alkaline: 13 hours talk time, 200 hours standby time
- Nickel cadmium: 4 hours talk time, 60 hours standby time

Weight
- 170 grams

CLID/CPND/VMWI Prerequisites:
- Meridian COMPANION with Meridian 1 Release 20 Software
- Software package #240, package #95 also required for CPND
- C200 behind Centrex with CMS service

Dimensions
- 14.5 x 6.3 x 2.2 cm

Color
- Black

Operating Temperature
- 0°C to 40°C

Radio Protocol
- CT2Plus Class 2 Standard
- 944 MHz-948.5 MHz (944 MHz-952 MHz capable) Dedicated frequency for Personal Communications
- 40 voice channels (72 voice channel capable)
- Time Division Duplex (TDD)
- 100 kHz channel spacing
- 32 kbits/sec Adaptive Differential Pulse Code Modulation (ADPCM) speech coding
- Dynamic Channel Selection
- Radio Frequency (RF) Output Power – 10 mW Effective Radiated Power (ERP) maximum

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Ordering Number: P0741155 Issue 05
April 1995

NORTEL

A World of Networks

Product Bulletin

Number: CALA-073-PB
Date: April 1997

StarTalk Flash Software Releases

Consistent with our regular process of upreleasing a product for new functionality, this new compatibility caused StarTalk FLASH to be upreleased to StarTalk FLASH 1.30. It should be noted, however, that **the software version is not necessarily the same as the product release**. The table below indicates the StarTalk FLASH product releases and corresponding software versions:

PRODUCT RELEASE	StarTalk FLASH 1.00	StarTalk FLASH 1.10	StarTalk FLASH 1.20	StarTalk FLASH 1.30
DESCRIPTION	product launch	"patch"	Maintenance Release	Compact ICS compatibility
SOFTWARE VERSION	1.00	1.10	1.28, 1.36	1.44

It is important to understand that software version 1.36 does not contain compatibility for the Compact ICS, but all StarTalk FLASH systems shipped after August 2 are compatible. We apologize for any confusion this numbering may have created.

To verify that a particular StarTalk FLASH is compatible with Compact ICS, confirm one of the following:

I) the PCMCIA cartridge label indicates either "**ENG/FR S/W VER. 1.44**" or "**ENG/SP S/W VER. 1.44**" (these numbers refer to software version, not product releases);
ii) the feature cartridge or the carton label shows one of the new CPC's as identified in MC065, June 1996; or you may
iii) perform a Feature 983 to confirm that the software version is 1.44.

The next release of StarTalk FLASH, available in the April 1997 time frame for MICS-XC and MICS 1.1 compatibility, will be 1.40. Until this compatibility release, there are no other planned software cartridge releases for StarTalk FLASH. In future, when referring to StarTalk FLASH, we will refer to the product release number; software versions will be used primarily for technical support purposes.

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NORTEL

A World of Networks

Product Bulletin

Number: CALA-072-PB
Date: April 1997

Norstar Year 2000 Transition Compliance

The Year 2000 is an important subject to anyone involved with telecommunications and computer systems. The change from 1999 to 2000 can create potential incompatibilities due to processor calendar calculations. In addition, the Year 2000 is a leap year, a century event that only occurs every 400 years, which adds further complexity to the transition.

Nortel, as the industry leader in digital communications systems, wants to ensure that you are fully conversant in this important topic so that you are able to make logical, informed decisions. We recognize that it is important for you to be able to understand the Year 2000 compatibility of the Norstar portfolio so that you can plan and prepare your transition over the next three years.

Included in this communiqué is a concise explanation which provides you with the Year 2000 compatibility for each Norstar system and Norstar application. It also includes a statement on the Vantage product line, which was Manufacture Discontinued in 1990. For products which require evolution for the Year 2000 we have provided a recommended plan.

In keeping with Nortel's commitment to investment protection, we will continue to work with our Authorized Distributors to offer you cost effective and efficient business solutions.

Norstar/Norstar-PLUS Systems

All Norstar/Norstar-PLUS systems will transition into the Year 2000 with no issue. This has been thoroughly tested and verified in Nortel Technologies laboratories.

Norstar Voice Mail

The Norstar Voice Mail 1.0 will encounter minor incompatibilities with the Year 2000 transition. The Norstar Voice Mail 1.0 report will sometimes show the Year 2000 as "100" instead of "00", for example, February 3, 2000 would read 02/03/100 instead of 02/03/00 as it should. The voice mail operation is unaffected, but the report will continue date errors as stated.

This situation was addressed in Norstar Voice Mail 2.0, which was available in July 1996, and which was provided as a free upgrade to Norstar Voice Mail 1.0 customers.

StarTalk FLASH

The StarTalk FLASH will encounter minor incompatibilities with the Year 2000 transition.

All StarTalk FLASH releases that are prior to the StarTalk FLASH 1.5 software release will sometime show the Year 2000 as "100" instead of "00", for example, February 3, 2000 would read 02/03/100 instead of 02/03/00 as it should. The voice mail operation is unaffected, but the report will continue date errors as stated.

The situation will be addressed in the release of StarTalk FLASH 1.5, which makes it compatible with the CICS 2.0 and MICS 2.0 release.

StarTalk

The will encounter minor incompatibilities with the Year 2000 transition.

All StarTalk products exhibit the following state when the date changes to January 1, 2000. The internal clock gets stuck at the year 1999, although the day and date will rollover to January 1 properly. The voice mail operation is unaffected, but the reports will contain date errors.

This situation was addressed in the StarTalk upissue release 2.04L which makes it compatible with the DR 1.1 software release (Jan/97). It is provided as a free upgrade to customers upgrading their Modular ICS systems to DR 1.1.

Optionally on January 1, 2000, they can simply reboot their system and the date will revert to the default of January 1, 1991. This will correct any reporting issues, since those issues are all associated with the year portion of the date. The year will be reported as 1991, but in all other aspects the system will function normally.

StarTalk Mini

The StarTalk Mini will encounter minor incompatibilities with the Year 2000 transition.

All StarTalk Mini products exhibit the following state when the date changes to January 1, 2000. The internal clock gets stuck at the year 1999, although the day and date will rollover to January 1 properly. The voice mail operation is unaffected, but the reports will contain date errors.

There will be no upissue provided for StarTalk Mini customers. On January 1, 2000 they can simply reboot their system and the date will revert to the default of January 1, 1991. This will address any reporting issues, since those issues are all associated with the year portion of the date. The year will be reported as 1991, but in all other aspects the system will function normally.

Remainder of Norstar Product Line

The remainder of the Norstar product line, past and present, will transition into the Year 2000 with no issues. This has been thoroughly tested and verified in Nortel Technologies laboratories.

Future Norstar Products

A test of the Year 2000 transition has been added to the Norstar Product Verification test suite to ensure compliance for new products being developed.

Third Party PC based Applications

Nortel is not responsible for Year 2000 compliance of third party PC based applications which interface with the Norstar system. Although many applications might utilize the Norstar system clock or even gather accurately-dated information from the Norstar TCM loop, the responsibility for Year 2000 compliancy of these products remains that of the vendor or manufacturer.

Vantage - Manufacture Discontinued

Vantage systems are not Year 2000 compliant. This product portfolio was Manufacture Discontinued in 1990 and as such there will not be any product development to make it compliant.

Thank you for your interest in the current and future functionality of the Norstar product line. Nortel is committed to building strong partnerships with our customers by understanding and responding to their needs. Nortel has a proven record of developing telecommunication products with the highest quality to offer you a cost effective and efficient business solution.

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NORTEL

A World of Networks

Product Bulletin

Number: CALA-074-PB
Date: April 1997

Norstar-PLUS Voice Mail Release 2.1

Nortel (Northern Telecom) Small Business Marketing is pleased to introduce Release 2.1 of Norstar-PLUS Voice Mail, effective **April 30, 1997,** which replaces Release 2.0. Release 2.1 is the next evolution of Norstar Voice Mail and encompasses all of the existing features and functionality of Release 2.0, options for AMIS networking and a feature-rich set of fax messaging applications, as well as the following new enhancements:

- **Editable Classes of Service:** This functionality is being introduced in response to customer requests and allows the administrator or technician to edit any of the values associated with a specific Class of Service. This is an especially useful capability for customizing certain elements, like message length (in minutes) where there might be a need for longer than 10 minutes. When a value in a given class of service is edited, that change effects every mailbox that has that class of service - it is not mailbox specific. **Note: Changes to classes of service must be performed using terminal administration and cannot be performed from a telephone set. Terminal administration can be accessed using any of the following methods:**

  a) **Installing the optional Monitor package (including SVGA card, keyboard and mouse) and running the OS/2 SPMSRV application.**
  b) **Using a VT100 compatible terminal connected to the Norstar Applications Module with an RS-232 connector.**
  c) **Using a personal computer with VT100 terminal emulation software connected to the Norstar Applications Module with an RS-232.**

- **Multiple Extensions to one mailbox:** this functionality means that up to three (3) extensions can be directed to one mailbox. The most common instance of this would be when a user has two lines and is using both a conventional Norstar set at the desk and a wireless Companion set. Since calls to both numbers would be answered by the same mailbox, the user only has to check and maintain one mailbox for both his extension numbers. In this situation, Norstar call processing will be configured to present calls to each of a subscriber's sets simultaneously, regardless of the Dialed Number, with the first set to answer controlling the call.

Another way this capability is implemented on Norstar Voice Mail 2.1 is to prevent a fax call from being answered by the called party. The mailbox owner is assigned a second extension number which is a virtual number that is directed to the mailbox and does not ring at any telephone set. This means that fax calls are always received on the first try and mailbox owners do not have to transfer callers into the mailbox or experience a loud and annoying fax tone when they answer those fax calls inadvertently. A fax message sent to the alternate number will be stored in the one mailbox and message notification will be given on the display of the telephone set.

In conjunction with the introduction of Release 2.1, Norstar is also introducing Norstar Application Module II (NAM II). The driving forces behind the changes in the Applications Module are twofold: upgrading to a Pentium processor, and increasing the size of the hard drive to support 70 hours of voice and fax message storage. With the increase in storage, the Applications Module II will be able to support multiple applications, such as Norstar-PLUS Voice Mail and Norstar-PLUS Interactive Voice Response (scheduled to be introduced in Q497) on one platform.

New product codes for Norstar-PLUS Voice Mail models, AMIS and Fax Messaging options are included in this communiqué. Some product codes were not changed as you will see in the table, but are included as well.

Norstar Voice Mail Release 2.1 is also supported on the existing NAM (NAM I) which may be running with Release 1.X or 2.0 software. The Release 2.1 upissue software for existing 1.X or 2.0 systems will be produced on a CD ROM disk with a set of diskettes and will be provided to the channels at no charge to be used in conjunction with the CD ROM readers *(or drives)* previously provided to the channels for the Release 2.0 upissues. This upissue kit is for **software only** and does not include any hardware changes.

Ordering Codes Code	Old Code	New
Norstar Voice Mail English Model 2	A0642921	A0666308
Norstar Voice Mail English Model 4	A0642924	A0666311
Norstar Voice Mail English Model 6	A0642927	A0666316
Norstar Voice Mail English Model 8	A0642930	A0666319
Norstar Voice Mail French Model 2	A0642922	A0777309
Norstar Voice Mail French Model 4	A0642925	A0666312
Norstar Voice Mail French Model 6	A0642928	A0666317
Norstar Voice Mail French Model 8	A0642931	A0666320
Norstar Voice Mail 2.1 S/W Up-issue Package, Bilingual CD-ROM	A0617430	A0666322
Fax Messaging - English	A0409575	A0670872
Fax Messaging - French	A0409576	A0670873
Norstar Voice Mail Documentation Kit (English) (consisting of)	A0642911	A0666009
English Doc Kit	A0642913	A0666010
Norstar Voice Mail Set Up and Operation Guide - English	P0819894	P0857695
Reference Guide - English	P0819895	P0857696
Norstar Voice Mail Programming Record - English	P0819898	P0857698
Norstar Voice Mail Installation Guide - English	P0819897	P0857697
Norstar Voice Mail User Guide Kit - English	A0642914	A0667413
Norstar Voice Mail User Guide Kit - English	A0642914	A0667413
Norstar Voice Mail User Guide - English (20 included)	P0819899	P0859495
Convenience Card - English (5 sheets of 4)	P0819896	No change

Norstar Voice Mail Documentation Kit (French) (consisting of)	A0642912	A0666011
English Doc Kit	A0642915	A0666012
Norstar Voice Mail Set Up and Operation Guide - French	P0819900	P0857699
Reference Guide - French	P0819901	P0857700
Norstar Voice Mail Programming Record - French	P0819904	P0857702
Norstar Voice Mail Installation Guide - French	P0819903	P0857701
Norstar Voice Mail User Guide Kit - French	A0642916	A0667414
Norstar Voice Mail User Guide Kit - French	A0642914	A0667414
Norstar Voice Mail User Guide - French (20 included)	P0819905	P0859496
Convenience Card - French (5 sheets of 4)	P0819902	No change
Norstar Voice Mail User Guide - English	P0819899	P0859495
Norstar Voice Mail User Guide - French	P0819905	P0859496
Norstar Voice Mail Maintenance Manual - English	P0745015	P0857707
Norstar Voice Mail Maintenance Manual - French	P0745016	P0857708
Norstar Voice Mail End User Documentation Kit (Spanish)	A0646159	A0667415
Convenience Card - Spanish (10 sheets of 4)	P0830320	No change
Norstar Voice Mail User Guide - Spanish (40 included)	P0830319	P0859497
Norstar Voice Mail Documentation Kit for Training - English (consisting of)	A0642911	A0666013
Norstar Voice Mail Set Up and Operation Guide - English	P0819894	P0857695
Reference Guide - English	P0819895	P0857696
Norstar Voice Mail Programming Record - English	P0819898	P0857698
Convenience Card - English (1 sheet of 4)	P0819896	No change
Norstar Voice Mail Installation Guide - English	P0819897	P0857697
Norstar Voice Mail User Guide - English (1 included)	P0819899	P0859495
Norstar Voice Mail Documentation Kit for Training - French (consisting of)	A0642918	A0666014
Norstar Voice Mail Set Up and Operation Guide - French	P0819900	P0857699
Reference Guide - French	P0819901	P0857700
Norstar Voice Mail Programming Record - French	P0819904	P0857702
Convenience Card - French (1 sheet of 4)	P0819902	No change
Norstar Voice Mail Installation Guide - French	P0819903	P0857701
Norstar Voice Mail User Guide - French (1 included)	P0819905	P0859496
Fax Messaging Documentation Kit (English) consisting of	A0617029	A0666016
Fax Setup and Ops Guide - English	P0745028	P0857703
Fax Installation Guide - English	P0745030	P0865366
Fax User Guide - English (40 are included)	P0745034	P0857704
Fax Messaging Documentation Kit (French) consisting of	A0617030	A0666015
Fax Setup and Ops Guide - French	P0745029	P0857705
Fax Installation Guide - French	P0745031	P0865366
Fax User Guide - French (40 are included	P0745035	P0857706
Fax Messaging User Guide - Spanish	P0745036	P0857709

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NORTEL

A World of Networks

Product Bulletin

Number: CALA-070-PB
Date: April 1997

Norstar-PLUS Voice Mail 2.1

AMIS Networking

Introduction

The Audio Messaging Interchange Specification (AMIS) is the telecommunication industry solution to networking remote voice mail systems which are manufactured by various vendors who developed and market the AMIS application. Those voice mail vendors who currently comply with the AMIS specification are Northern Telecom (Nortel) for Meridian Mail and Norstar-PLUS Voice Mail, Lucent Technologies Audix, Centigram, Octel, ROLM PhoneMail, VMX, Active Voice, AVT, and Toshiba. AMIS is available on Norstar-PLUS Voice Mail (Release 2.0 and 2.1).

AMIS Description

AMIS provides voice messaging to different mailboxes located at different sites on a communication network. A network, as it is referred to here, is a collection of offices, locations or sites connected by a telecommunication link. Each site on the network must have AMIS installed and enabled to send, receive or reply to network messages.

Each site on an AMIS network is assigned a network identification number. This number consists of a site country location, area code, and telephone number.

There are AMIS features allow network messaging capability. These features include:

1. Network receive: allows a site to receive network voice messages from other AMIS sites.

2. Network delivery: allows a site to send voice messages to other AMIS sites.

3. Network reply: allows a site to respond to network messages.

4. Network broadcast messaging: when enabled, allows broadcast messaging across the AMIS network.

5. Network system group list messaging: when enabled, allows network delivery messages to be sent to other AMIS sites on a group list.

Note: When AMIS is first installed, all of the above features are enabled with the exception of broadcast and system group list messaging. These two features are defaulted to "no" and must be enabled to be used. Also, in order for the AMIS software to function, the Norstar-PLUS Voice Mail system must have the Automated Attendant set to answer the lines on which the other AMIS systems will call.

Each AMIS site on the network has a special "loopback" mailbox number which is used to determine if two sites are communicating successfully. Whenever a message is received by a loopback mailbox, it immediately sends the message back again to the originating mailbox on the originating system. If a voice message is sent to the loopback mailbox of a site and fails to receive a response after a while, one site or the other may be improperly configured.

The loopback mailbox is created automatically when AMIS is installed. **If a mailbox with the required number already exists in the system, it will be deleted by the install process.** The mailbox number will be "13, 103, 1003,..." depending on the mailbox number length in use at that site.

(See the attached Appendix A for an AMIS feature comparison with the AMIS Standard, Meridian Mail and Norstar-PLUS Voice Mail.)

Sending Network Messages

When a local user addresses a message to a remote AMIS user, the local system essentially dials the remote system access number, identifies itself as another AMIS-compatible site, identifies the target mailbox number, and delivers the message. Non-voice information is exchanged via DTMF signaling. Voice information is transferred by having one site play while the other records the message.

An AMIS network delivery call will typically deliver a single message to a single recipient, however, the Norstar-PLUS Voice Mail implementation of AMIS supports "batching" of up to 8 messages destined for a single site. While transparent to subscribers, this feature will result in lower long distance charges for the sending system. Users should avoid forwarding a message multiple times involving AMIS transfers because of the slight degradation in voice quality

The times for sending network messages is controlled by calling block periods where the administrator can specify up to 4 blocked periods per day, for each day of the week. Typically, an administrator may want to block the busiest times of the work day and send the messages when lines are less busy and perhaps long distance rates are cheaper.

Network messages can be sent to any site on an AMIS network with the network receive feature enabled. Network messages can be sent in 2 ways:

1. Direct addressing: Allows a user to specify where a message is to be delivered. When a mailbox owner uses direct addressing, the user specifies the telephone number of the destination site and the destination mailbox number. The mailbox number coded in the address must correspond to a regular subscriber mailbox at the remote site system. The line or line pool number Norstar-PLUS Voice Mail uses to make the call is taken from the loop back mailbox outdial set up.

After completing the address, the user is given the option of assigning delivery options, such as urgent or certified, or viewing the address components for correctness prior to sending the message.

Direct addressing is available only to mailbox owners, not to general callers. Direct addressing is not permitted when using Feature 980 (leave message) even when the caller is using an extension that belongs to a mailbox owner.

2. Network delivery mailboxes: allows callers at one site to quickly and easily send a message to a mailbox at a remote location. Each network delivery mailbox is assigned a mailbox number on the system identifying the destination site telephone number, line or line pool number and destination mailbox number.

When the network delivery mailbox is selected, Norstar-PLUS Voice Mail automatically accesses the specified line, dials the destination site telephone number and transmits the network message to the target mailbox. The user needs only to record a message and select the network delivery mailbox number. For example, you might set up a network delivery mailbox number 5674. You would add the mailbox to the Norstar-PLUS Voice Mail system and specify line number 8, destination telephone number 555-1213 and the destination mailbox 234. Each time a registered Norstar-PLUS Voice Mail mailbox owner accesses mailbox 5674 at your site, Norstar-PLUS Voice Mail knows immediately it is a message intended for mailbox 234 at another location.

The number of network delivery mailboxes needed is determined by how many users are in the AMIS network and what type of network messaging is required. Network delivery mailboxes compete for available mailbox numbers and it is recommended that administrators reserve certain number ranges for various purposes, perhaps by leading digit, so that the type of mailbox can be inferred from its number. There is a maximum of 1000 mailboxes on Norstar-PLUS Voice Mail Release 2.0. The maximum number of mailboxes includes any combination of special, personal, guest, information and network delivery mailboxes.

AMIS Usage

AMIS is assigned through class of service and is used by registered mailbox owners who have initialized their mailboxes. Users can only send a network message after they have opened their mailboxes. After recording a message, a user can either send the message through direct addressing or use a network delivery mailbox.

Network delivery mailboxes can also appear in the company directory. Although they appear in the company directory, only a registered mailbox owner can select a network delivery mailbox.

Note: When the Automated Attendant provides the company directory option and a network delivery mailbox is selected from the directory by a caller without a mailbox, the caller is informed that access to the mailbox is not allowed. Only registered mailbox owners can access network delivery mailboxes.

AMIS Administration

AMIS is installed by use of a software keycode. After installation, AMIS is fully operational and available to all registered mailbox users. AMIS is controlled by a number of parameters which are maintained from "Network Admin" under Feature 983. After enabling AMIS, the administrator may need to increase the number of outdial channels. As a general rule, the number of outdial channels should never exceed 50% of the total available channels.

AMIS Networking Feature Comparison

Feature	Norstar-PLUS Voice Mail	Standard AMIS	Meridian Mail AMIS
Message Length (min.)	8	8	99
Max Messages / Send	9	9	Unlim.
Send/Receive/Reply	Y	Y	Y
Forward	Y	N	Y
Non-delivery Notification	Y	Y	Y
Timed Delivery	Y (1)	N/A	Y
Acknowledge Receipt	Y	N	N
Urgent / Privacy tags	N	N	N
Message Send Priority	Y	N	Y
AMIS Open Addressing	Y	Y	Y
Distribution Lists	Y	N/A	Y
Send/Reply Message Features:			
Spoken Name Confirmation	Y (2)	N	Y
Call Sender	N	N/A	Y
Reply-All	N	N	N
Call-Answer Message Features (2):			
Spoken Name Confirmation	N	N	Y
Call-back Caller	N	N/A	Y
Reply to Caller	N	N	Y

Note:
(1) Norstar-PLUS Voice Mail Release 2.0 supports call blocking periods
(2) Target must be a network delivery mailbox

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NORTEL
NORTHERN TELECOM

Norstar Remote Utilities 2
CALA
Channel Introduction Package

Date: February 28, 1997

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Norstar Remote Utilities 2

1.0 Introduction

Northern Telecom (Nortel) is pleased to announce the availability of Norstar Remote Utilities 2 (NRU 2), the latest release of Norstar remote administration software. Norstar Remote Utilities 2 is a business tool specifically designed to provide superior service and cost effective support of Norstar and Norstar-PLUS business communication systems. Norstar Remote Utilities 2 offers the additional administration of Norstar-PLUS MICS 1.1 and DR5.1 databases over earlier versions of the Norstar Remote Utilities product. Norstar Remote Utilities 2 will replace the existing version of the Norstar Remote Utilities product.

2.0 Product Positioning

Norstar Remote Utilities 2 (NRU 2) enables users to substantially reduce operation costs and improve responsiveness by providing enhanced system support without a site visit. NRU 2 allows distributors to implement improvements in their support processes for increased profitability. Installed base management with NRU 2 reduces operations costs, creates new service revenue opportunities, and enhances the distributor's image and competitiveness as a responsive service provider making use of leading edge technology.

2.1 Distributor Benefits

Operational cost savings	-Reduces the need for site visits on 60% of trouble calls. Initial implementation costs can be recuperated within 3 service calls (based on $75.00/hr per visit).
New service revenue opportunities	-Promotes additional maintenance revenue by offering low-cost, real-time system support in addition to existing capabilities such as backup/restore, database reports, etc.
Increased service responsiveness	-Immediate response to major and minor service requests greatly increases customer satisfaction levels. Also reduces time spent on each service request, thus increasing productivity levels.

Increased service ability

-Real-time terminal emulation, database administration, diagnostics, and system analysis provide optimal service ability by reducing the need for common site visits due to incorrect programming (end user/technician), time and date changes, system speed dial changes, unplugged sets, DND activation, etc.

Increased system optimization

-Real-time system inventory access provides for immediate implementation of 100% of database-only related adds, moves, and changes as well as preparation for adds, moves, and changes requiring additional hardware.

2.2 End User Benefits

Optimal repair service

-Immediate response to service requests promotes customer satisfaction and reduces customer inconvenience and downtime created by subject of service request. Areas such as hardware outages, service impairing database changes, and human error can be easily diagnosed and resolved in an expedient manner.

Increased productivity

-Faster distributor response to adds, moves, and changes increases customer productivity and inconvenience levels in areas such as departmental personnel changes, outside line reconfigurations, system feature implementation, voice mail administration, etc.

Reduced programming

-Ease of distributor remote access reduces end user requirements for programming and training.

3.0 Product Description

3.1 Product Overview

Norstar Remote Utilities 2 (NRU 2) is a software package comprised of 3 components: Norstar Manager 3.3 software, Remote Set Software (RSS), and documentation. Each software component assists users in administering, maintaining, and programming various Norstar key and voice mail systems
(Figure 1).

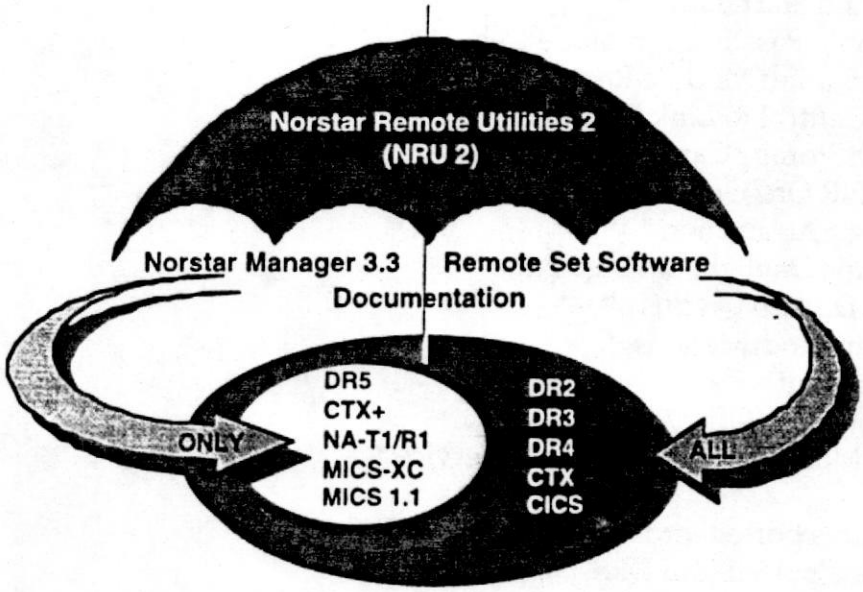

Figure 1.

The NRU 2 application, installed on a PC located at a remote location or at the phone system site, communicates through a Remote Access Device (RAD). A RAD connects the different components of the NRU 2 to a Norstar system via a station port and can auto answer an existing line on the Norstar system. Also, calls can be manually transferred to the RAD by an on-site operator. In remote connections a separate connection device must be used by the PC to communicate with the RAD. You can choose either a modem or a Norstar Data Communications Interface (DCI) as the connection device.

Note: The DCI is not supported by Modular ICS, Modular XC, and Compact ICS software feature cartridge. On these systems you can only use a modem.

The following provides a description of the different components of the NRU 2:

3.1.1 Norstar Manager 3.3

The features and functionality of Norstar Manager 3.3 remain the same as Norstar Manager 3.2 with the exception of the additional support for the new MICS 1.1 platform and the upcoming DR5.1 release (scheduled for availability in February 1997 and April 1997 respectively). The following reflects the feature enhancements of MICS 1.1 and DR5.1 which require administration and are now supported by Norstar Manager 3.3:

T1 Ground Start Support
Adminable Passthrough Mode Delay **
Analog Station Module Recognition
Access Control to Link Feature **
Call Log Storage Capacity Reduction
LNR/SNR On/Off Admin
ARS Digit Absorption *
Automatic Daylight Savings Time *
Do Not Disturb On Busy */**
Loss Plan Modifications *
Page Timeout *
Page Tone On/Off */**
Service Modes Extended Ringing Service *

* Existing features ported into MICS 1.1 from MICS-XC 1.0
** Enhancements ported into DR5.1

3.1.2 Remote Set Software (RSS)

RSS is a fast effective remote administration tool that provides Windows based capabilities for configuring, administering and maintaining Norstar Key System Units and peripherals via simulated M7310 and M7324 extension types. If installed as a standalone product, RSS provides you with the facilities to store profiles of Remote Access Device (RAD and I-RAD) connections and desired extension type information on the PC hard drive. RSS provides the following capabilities:

- MMI that simulates a Norstar set (M7310 or M7324) when programming
- Remote configuration, administration and maintenance functions for most Norstar system types and softwares
- Ability to remotely program Voice Mail features excepting those requiring voice capability
- Remote programming of all Norstar peripherals
- Remote administration of the Remote Access Devices (RAD and I-RAD)
- On-line programming of the KSU with simulated M7310 and M7324 extension types
- Direct queries of device status
- Copying of extensions and lines within a system

Note: RSS does not provide Backup/Restore, Off-line programming, Reporting ,

3.1.3 Documentation

The documentation has been updated to include installation and user instructions for Norstar Manager 3.3 and Remote Set Software. Documentation is available in English and French.

3.1.4 Physical Description

The Norstar Remote Utilities 2, packaged on three 3.25" disks, runs on an IBM 386 (or greater) PC or compatible, running MS-DOS 5.0 or later and MS Windows 3.1. The Norstar Remote Utilities 2 will operate on a configuration of processor, memory and peripherals which is comparable to that provided by an IBM 386 computer. The computer requires a VGA monitor and at least 8 Mbytes of memory. The Norstar Remote Utilities 2 will run on a laptop provided that it is equipped with the above hardware configuration. A 100 MB hard drive is recommended. **Note: For improved speed and to accommodate future application enhancements, an IBM 486 PC or compatible with 8 MB of RAM and 160 MB hard drive is recommended to run the Norstar Remote Utilities 2.**

The hardware component of the Norstar Remote Utilities 2 is a Remote Access Device, (RAD), which acts as a communication bridge between the KSU and PC. The RAD provides B to D channel conversion at 1200 or 2400 baud remotely, or 9600 baud on a direct connection, security against unauthorized remote access, and a means of calling a remote alarm device (a printer or a console).

Note that the Norstar-PLUS Compact ICS utilizes an Internal Remote Access Device (I-RAD) instead of the standard RAD.

A commercially available, Hayes compatible modem capable of operating at 1200 or 2400 baud is necessary for establishing remote connections between the PC which is running RSS and the RAD. The modem may be external or internal to the PC. **Note: It is highly recommended that the modem have two separate line and phone ports if the operator assisted call feature of Norstar Manager 3.3 or RSS is to be used.**

3.1.5 Compatibility with KSU software

Norstar Manager 3.3 is compatible with only the following Norstar system software:

• 3x8 DR5	all releases	all releases
• Compact DS DR5	all releases	all releases
• Compact DR5*	A0630283	A0630281
• Modular DR5*	A0638528	A0628540
• Modular Centrex+*	A0628592	A0628593
• Norstar-PLUS Modular ICS Release 1 /T1	A0629079	A0629079
• Norstar-PLUS Modular ICS Release 1/Centrex	A0629080	A0629080
• Norstar-PLUS Modular ICS XL	A0638646	NA
• Norstar-PLUS Modular ICS XC	A0632415	A0632420
• Norstar-PLUS MICS-DR 1.1	A0642274	A0642274
• Norstar-PLUS MICS-XC 1.1	NA	A0649683

**software purchased after July 1, 1993*

RSS is compatible with all Norstar system types and all versions of Norstar system software (DR2 or greater) **provisioned with the new RAD** (A0648815-English and A0648816-French), available since March 30, 1996.

3.1.6 Compatibility with Remote Access Device

Norstar Manager 3.3 is compatible with all versions of the RAD except for the internal RAD (I-RAD) of the Norstar-Plus Compact ICS.

RSS is compatible with only the Internal RAD (I-RAD) of the Compact ICS and the new RAD (A0648815-Eng and A0648816-Frc), available since March 30, 1996.

3.1.7 User Interface

The Norstar Remote Utilities 2 user interface for both Norstar Manager 3.3 and RSS remains the same as the previous versions of Norstar Manager 3.2 and RSS.

3.1.8 Installation and Upgrades

The NRU 2 installation process is very similar to that of previous versions of Norstar Manager. However, you will now have the option of either installing both Norstar Manager 3.3 and RSS, or only RSS on the PC. Installation of NRU 2 (both components) takes approximately 3-5 minutes. Upgrades are supported from the following releases of Norstar Manager:

Version 2.1- with an option to replace or keep version 2.1 installed
Version 3.0- with or without 2.1 also installed
Version 3.1- with or without 2.1 also installed
Version 3.2- with or without 2.1 also installed

4.0 Specifications

The minimum PC requirements for Norstar Remote Utilities 2 are:

- IBM compatible 80386 (80486 recommended) 20-25 MHz processor
- 8 MB RAM memory
- MS-DOS 5.0 and Windows 3.2
- 3.25" 1.44 MB diskette drive
- VGA color monitor
- 101 key enhanced keyboard
- 100 MB hard disk
- 2400 baud Hayes-compatible internal or external modem
- 1 serial port (required for direct connection to RAD)
- 1 parallel port (required for hard copy of reports when using Norstar Manager 3.3)

5.0 Ordering Information

These new products are scheduled for availability from Nortel in **April 1997**.

Product Description	NT Code	CPC	List
Norstar Remote Utilities 2 (Eng)	NT8B81AS-93	A0661467	$750.00
Norstar Remote Utilities 2 (Frc)	NT8B81BS-93	A0661468	$750.00
Norstar Remote Utilities 2 Documentation Kit (Eng)	NTAB2026	A0664246	$60.00
Norstar Remote Utilities 2 Documentation Kit (Frc)	NTAB2027	A0664249	$60.00

The Norstar Remote Utilities 2 product ships with all of the appropriate documentation to facilitate a simple installation and user process. Again, NRU 2 contains Norstar Manager 3.3, Remote Set Software, and documentation. Documentation does include the appropriate training materials for remote maintenance.

6.0 Warranty and Repair

The standard "Norstar Key Telephone Systems - Warranty and Repair Policy and Repair Procedures" will apply to the Norstar components listed in this document.

7.0 Training

7.1 Technical Training

There is no additional technical training provided for the NRU 2. Product ships with self-paced tutorial and appropriate documentation.

7.2 Sales Training

There is no additional sales training provided for the NRU 2.

8.0 Contact List

Marketing	Carlos Fidalgo	(954) 851-8064
Product Management	Cynthia Becerra	(954) 851-8354
CTAS Technical Support:		(954) 851-8400

norstar

NORTEL
NORTHERN TELECOM

Sales and Marketing Bulletin

Number: CALA-118-MB
Date: June, 1997

Norstar Year 2000 Transition Compliance

The Year 2000 is an important subject to anyone involved with telecommunications and computer systems. The change from 1999 to 2000 can create potential incompatibilities due to processor calendar calculations. In addition, the Year 2000 is a leap year, a century event that only occurs every 400 years, which adds further complexity to the transition.

Nortel, as the industry leader in digital communications systems, wants to ensure that you are fully conversant in this important topic so that you are able to make logical, informed decisions. We recognize that it is important for you to be able to understand the Year 2000 compatibility of the Norstar portfolio so that you can plan and prepare your transition over the next three years.

Included in this bulletin is a concise explanation which provides you with the Year 2000 compatibility for each Norstar system and Norstar application. It also includes a statement on the Vantage product line, which was Manufacture Discontinued in 1990. For products which require evolution for the Year 2000 we have provided a recommended plan.

In keeping with Nortel's commitment to investment protection, we will continue to work with our Authorized Distributors to offer you cost effective and efficient business solutions.

Norstar/Norstar-PLUS Systems

All Norstar/Norstar-PLUS systems will transition into the Year 2000 with no issue. This has been thoroughly tested and verified in Nortel Technologies laboratories. This includes all software releases of core systems which includes 3X8, Compact 616, Modular 8X24, Compact ICS and Modular ICS.

Norstar Voice Mail

The Norstar Voice Mail release 1.0 will encounter minor incompatibilities with the Year 2000 transition. The Norstar Voice Mail release 1.0 report will sometimes show the Year 2000 as "100" instead of "00", for example, February 3, 2000 would read 02/03/100 instead of 02/03/00 as it should. The voice mail operation is unaffected, but the report will continue to display dates as stated.

This situation was addressed in Norstar Voice Mail 2.0, which was available in July 1996, and which was provided as a free upgrade to Norstar Voice Mail 1.0 customers. Distributors have been provided with the software to allow them to provide upgrades from Norstar Voice Mail 1.0 to 2.0.

StarTalk FLASH

The StarTalk FLASH will encounter minor incompatibilities with the Year 2000 transition.

All StarTalk FLASH releases that are prior to the StarTalk FLASH 1.5 software release will sometime show the Year 2000 as "100" instead of "00", for example, February 3, 2000 would read 02/03/100 instead of 02/03/00 as it should. The voice mail operation is unaffected, but the report will continue to display dates as stated.

The situation will be addressed in the release of StarTalk FLASH 1.5, which makes it compatible with the CICS 2.0 and MICS 2.0 release.

StarTalk

The StarTalk will encounter minor incompatibilities with the Year 2000 transition.

All StarTalk products exhibit the following state when the date changes to January 1, 2000. The internal clock gets stuck at the year 1999, although the day and date will rollover to January 1 properly. The voice mail operation is unaffected, but the reports will contain date errors.

This situation was addressed in the StarTalk upissue release 2.04L which makes it compatible with the DR 1.1 software release (Jan/97). It is provided as a free upgrade to customers upgrading their Modular ICS systems to DR 1.1.

Optionally on January 1, 2000, they can simply reboot their system and the date will revert to the default of January 1, 1991. This will correct any reporting issues, since those issues are all associated with the year portion of the date. The year will be reported as 1991, but in all other aspects the system will function normally.

StarTalk Mini - Manufacture Discontinued

The StarTalk Mini will encounter minor incompatibilities with the Year 2000 transition. Since this product has been Manufacture Discontinued, there will not be any product development to make it compliant.

All StarTalk Mini products exhibit the following state when the date changes to January 1, 2000. The internal clock gets stuck at the year 1999, although the day and date will rollover to January 1 properly. The voice mail operation is unaffected, but the reports will contain date errors.

Optionally on January 1, 2000 customers can simply reboot their system and the date will revert to the default of January 1, 1991. This will address any reporting issues, since those issues are all associated with the year portion of the date. The year will be reported as 1991, but in all other aspects the system will function normally.

Remainder of Norstar Product Line

The remainder of the Norstar product line, past and present will transition into the Year 2000 with no issues. This has been thoroughly tested and verified in the Nortel Technologies laboratories.

Future Norstar Products

A test of the Year 2000 transition has been added to the Norstar Product Verification test suite to ensure compliance for new products being developed.

Third Party PC based Applications

Nortel is not responsible for Year 2000 compliance of third party PC based applications which interface with the Norstar system. Although many applications might utilize the Norstar system clock or even gather accurately-

dated information from the Norstar TCM loop, the responsibility for Year 2000 compliance of these products remains that of the vendor or manufacturer.

Vantage - Manufacture Discontinued

Vantage systems will encounter minor incompatibilities with the Year 2000 transition. Since this product portfolio was Manufacture Discontinued in 1990, there will not be any product development to make it compliant.

It should be noted that none of the phones have displays and the date and time are only used in the SMDR records. All Vantage products will exhibit the following state when the date changes to January 1, 2000. The year will show 0000, although the time, day and date will rollover to January 1 properly. The SMDR operation is unaffected, but the reports will continue to display dates as stated..

Thank you for your interest in the current and future functionality of the Norstar product line. Nortel is committed to building strong partnerships with our customers by understanding and responding to their needs. Nortel has a proven record of developing telecommunication products with the highest quality to offer you a cost effective and efficient business solution.

If you have any questions or comments, or require further information, please contact:

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☐ Por favor marque aquí si Ud. es nuestro cliente para Magellan

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Envíe este formulario al fax (954)851-8818, atención, Claudia Joannou, en el Dept. de Comunicaciones.

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Sunrise, Florida 33323
Telephone: (305) 851-8000
Fax: (954) 851-8818
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Send this form via fax to the following number (954) 851-8818, attention: Claudia Joannou, Documentation Manager.

NORTEL

A World of Networks

Product Bulletin

Number: CALA-066-PB

Date: January 1997

Norstar-PLUS MICS/CICS Competitive Notes

Attached please find 1997's first release of competitive information for Norstar. During the next 6 months you will receive a monthly package of competitive data, including competitive notes, presentations, and other tools which can facilitate positioning Norstar against the competition. Note that this information is provided from either Nortel's North American and/or European divisions, thus not all enclosed will accurately represent either the competition or the product you have in the market.

Enclosed in this first release are the following Competitive Notes:

- Inter-Tel Axxent
- Norstar CTI Competition Overview
- Compact-ICS vs. the Competition
- Norstar Marketshare
- Lucent (AT&T) Partner
- Coporate Overview
- Inter-Tel Axxess
- AT&T Legend
- Executone IDS
- Norstar Reliability
- Energy Consumption
- Toshiba DK280
- Telrad Digital
- Digital vs. Analog
- Legend/ISDN Comp
- Comdial Impact Telephones
- Panasonic DBS

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NORTEL
NORTHERN TELECOM

Sales and Marketing Bulletin

Number: CALA-117-MB
Date: May 1997

Norstar-PLUS vs. Lucent Competitive Sales Guide

It is not a secret that Lucent Technologies is one of Norstar's most fierce competitors. Their Partner and Legend systems compete directly with Norstar's Compact ICS and Modular ICS. The intend of the attached document is to give you an idea of some of the strategies used by Lucent to position its product against Norstar. The document also includes information on how you can take advantage of Lucent's attacks over Norstar.

Some of the features and applications described in the document are not available in the CALA region yet. They will be available before the end of 1997.

The last two pages of the document include a comprehensive listing of deficiencies of the two Lucent products when compared with the Norstar-Plus products.

If you have any questions or comments, or require further information, please contact:

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Norstar vs. Lucent Competitive Sales Guide

Introduction

It's no secret to anyone who sells Norstar that Lucent Technologies is one of Norstar's most common competitors with their Partner and Legend systems. Lucent has a lot of "feet on the street" and a big advertising budget that ensures that they will bulldoze their way into a lot of your potential sales in most areas of the U.S., and to a lesser extent Canada.

Therefore, you'll need to be more knowledgeable than the Lucent sales person if you're going to consistently win against them. Using this sales guide we hope to arm you with all the information you'll need to win. Once you understand the tactics Lucent sales people use, and the overall value of Norstar, closing business will be considerably easier.

Nortel–A Market Share Leader

Norstar continues to claim the overall number one position in the world market share numbers for the small business system market.

Norstar also continues to claim the number one market share position in Canada as well. Nortel's market share was up from 60.3% in 1995 to 63.2% in 1996. Lucent lost ground in Canada, falling from 4.5% in 1995 to 4.2% in 1996. Again in 1996 Nortel was by far the market leader in all segments of the Canadian market.

	'95	'96	Change
Norstar	60	63	+3
Lucent	4	4	0

Table 1–Canada Market Share

In the U.S., Lucent is still using the 1995 market share figures in their presentations to back their claim as the U.S. small business system market leader. But their picture isn't as bright when 1996 numbers are used. According to Infotech Consulting Lucent fell from 25.6% share in 1995 to 23% in 1996. Norstar went from 15.4% share to 17.8%.

	'95	'96	Change
Norstar	15	18	+3
Lucent	26	23	(3)

Table 2–U.S. Market Share

When you break down the market share numbers into station shipments, Nortel has the lead in the 21-40 and the 40+ station size. And with the introduction of Norstar-PLUS Compact ICS last year, we are gaining on Lucent in the 2-10 and 11-20 station size.

	2-10	10-20	21-40	40+
Norstar	#2	#2	#1	#1
Lucent	#1	#1	#2	#2

Table 3–Station Segment Position

Nortel is gaining market share with a single communication system–Norstar. Lucent is currently selling Partner and Legend, two systems that are totally incompatible with each other. If a customer outgrows Partner, then what? Not even Partner telephones work on the Legend let alone any of its other equipment. Customers who buy Compact ICS can migrate the largest part of their investment to the Modular ICS.

Lucent Declares War

In an attempt to regain market share, Lucent has declared a price war on Norstar by giving their salespeople 10% to 50% discounting ability in certain situations when competing against Norstar. But Nortel doesn't feel the need to fight Lucent on price because when Norstar is positioned correctly, it is by far the better system than either Legend or Partner. Lucent's price discounts are really just bringing the price of their products a little closer to their true value as you will see later.

So your first objective is not to panic when you hear that Lucent is discounting their price in a bid against Norstar. Nortel clearly has the better product and we are winning sales when Norstar's value is positioned correctly, even when Lucent prices their products significantly lower than Norstar.

Your second objective then is to understand where Norstar's value is.

That's what this sales guide has been developed to do.

Lucent Price Discounting

Besides offering 10% to 50% discounts on some sales, Lucent also has some other pricing tactics they use. One of the ways Lucent is discounting their price is through their "A Competitive Advantage" program. If a sales person is in a competitive bidding situation with Nortel, they can offer the customer a 10% rebate if the customer provides Lucent with a Nortel proposal. They can only offer a 5% rebate on other competitors (we should feel special). This discount can only be offered if our proposal is priced less than Lucent's proposal.

The most common way Lucent sales people get their price down when it comes to Legend sales, is that they populate the system with cheap analog sets. This tactic reduces the overall usability of the system. With analog sets a customer loses such functionality as LCD displays, speakerphones, station messaging, Do Not Disturb, auto dial buttons, date and time, caller line ID, and advanced features such as integrated voice and data and computer telephone integration. Those unhappy users stuck with analog stations also have to manually enter feature codes, which cuts down on the usability of the system, and therefore the productivity of the user. Table 4 illustrates a few of the many feature codes that must be entered by users with analog sets.

Redial	#84
Leave Message	#25
Paging	#9 (can't receive page)
Park	Flash15–dial extension

Table 4—Analog Station Feature Access

At other times Lucent will offer a lower initial product cost, but they require the prospect to accept their multi-year maintenance contract, of which payment is weighted mostly on the front end of the deal. Since today's dollars are worth more than tomorrow's dollars thanks to inflation, Lucent still comes out in an acceptable financial position even though they may not make much money on the initial equipment sale.

It depends on the Norstar distributor as to what maintenance contracts are offered during a Norstar sale. If you are not using maintenance contracts to subsidize the initial sale, knowing that Lucent does could be used to your advantage.

Another form of price discounting Lucent is using to win sales is in the form of giving away free products. As you have seen in the market share numbers, Norstar's market share has been growing without giving away free products or offering deep price discounts. Lucent's "freebies" and price discounts are just a way for Lucent to add value to their otherwise overpriced system.

Platform Assurance Guarantee

Lucent has what they call a "Platform Assurance Guarantee" that allows a customer to return a Legend or Partner within the first year of purchase. If customers choose to take advantage of this program, they would be refunded the equipment and labor cost that they have invested. This program has been good for Nortel since it has given us the opportunity to sell Norstar to Lucent customers who were dissatisfied with Legend.

Nortel offers a similar program, but it is only for a period of three months. However, this hasn't been an issue for us since Norstar customers are satisfied customers.

Extended Warranty

As a way to win sales, Lucent has been offering anywhere from two to five year warranties, with two years being common. Our distributors offer a variety of warranty terms and options, but Norstar has a return rate of less than one-tenth of one percent, and most of those product returns are tested with no fault found, therefore a warranty is not something that is used much on Norstar.

When it comes to reliability Legend and Partner don't compare. For instance, Norstar's Mean Time Between Failure (MTBF) rates are significantly higher than Legend's published figures. MTBF shows the average time the system is expected to operate before any type of failure occurs. Legend's MTBF is published in the *Merlin Legend*

Communication Release 3.0 Equipment and Operations Reference manual as only 2.1 years. Norstar-PLUS Modular ICS has a MTBF of over 50 years.

Partner doesn't even have published MTBF figures, but given that it consumes far more power and produces more heat than either Legend or Norstar, its reliability is probably lower than Legend.

Norstar Value

Computer Telephone Integration

Up until this year the market for CTI products has been, and perhaps still is to some extent, fairly weak. However, 1997 has been touted as the year CTI products take off. Now that the industry is developing more and more products using Microsoft's TAPI "standard," end-users are starting to learn what CTI can do for them.

Legend and Partner don't even support TAPI today. The former equipment side of AT&T, which is now Lucent, was one of the original developers of TAPI's competition–TSAPI. TSAPI requires an expensive Novell LAN before it can be implemented.

Only the proprietary Lucent PassageWay CTI option is now available for Legend and Partner. PassageWay is not TAPI compatible, meaning that it only supports applications developed specifically for Legend and Partner. Purchasing a closed architecture system like Legend or Partner means that customers will be locked into whatever Lucent decides to offer for CTI. If Lucent hasn't had someone develop a specific software package for their systems, that means you can't get it anywhere else.

Norstar's TAPI compatibility means that a wide variety of software applications are already available for it. And Norstar also supports TSAPI applications as well.

Integrated Services Digital Network

Lucent has been using the fact that Norstar doesn't yet offer ISDN as a weapon against Norstar since they first supported it. The fact is that it isn't really sold as often as it's used to win a sale, but they effectively use ISDN as a scare tactic.

Lucent currently has both ISDN BRI and PRI on Legend. Lucent has also demonstrated support of ISDN BRI on Partner, but with Partner's analog to the desktop architecture, it can't support ISDN to the desktop. Lucent's support of ISDN for Partner means that they tack on an external ISDN terminal adapter and connect the analog output of the terminal adapter to Partner's analog CO line cards. This defeats the whole purpose of ISDN.

Norstar will soon have a real ISDN BRI available for both Compact and Modular ICS. Not only will Norstar have ISDN, but it will have some great applications available for it as well.

Norstar's ISDN BRI will support point-of-sale or other light data applications over an ISDN BRI D-channel, or what's called D-channel packet switching. The classic use for D-channel packet switching is for credit card verification. Normally after a credit card is scanned you would have to wait for 20 seconds or more on each transaction for credit approval. Using Norstar's D-channel packet switching, credit verification will be almost instantaneous. For a high volume retail store, this could add up to a time savings of around an hour a day. Lucent can't duplicate this application with the Partner or Legend.

Another application for Norstar's ISDN BRI is for high speed data such as Internet access. Norstar will soon have an ISDN data device that allows Dynamic Bandwidth Allocation. Dynamic Bandwidth Allocation will allow a user to use both B-channels of a BRI line to access the Internet while the Norstar telephone can still be used. So if a voice call comes in, the user is notified with Caller Line ID on the PC's monitor. If the user decides to pick up the call, the Internet data call drops one of the B-channels, therefore allowing a simultaneous voice and data call. Once the user hangs up the voice call, the Internet data call takes back the B-channel used by the voice call, and now both B-channels are in use for the data call again. Once again, Partner and Legend can't handle this application.

One of the great features of Norstar's ISDN data device is that it will also support TAPI applications. The ISDN data device will allow users to take advantage of the multitasking capability of their PCs by switching between TAPI applications and data calls. And it will even come with its own TAPI application called the Personal Call Manager. So a user could be surfing the Internet and switch to his or her Personal Call Manager to dial a call. Of course, this is where Norstar's Dynamic Bandwidth Allocation comes in handy. Partner and Legend don't even have a TAPI device, let alone one that supports ISDN.

Wireless Telephones

Maybe most customers don't believe their business needs to adopt wireless telephones today, but that's the way they also felt about voice mail a few years ago. Now that voice mail's cost has declined, it is becoming table stakes for most businesses. Wireless costs too will eventually come down. Once they do, the competitive environment most businesses play in will eventually force them to adopt this new technology to help them keep their customer service at the same level as their competition. Since Norstar supports a true wireless phone and Legend doesn't, you should be positioning this in the same way as Lucent is positioning ISDN against us. We have it now, they don't.

For larger installations, Lucent's TransTalk cordless phones cost about as much to implement as Norstar's Companion with very few of the advantages Companion provides. Their pocket telephones cost around $1200 per user, yet they operate in a frequency that the FCC can't do anything about if your neighbor has one of the 550 possible 900MHz devices that could interfere with your TransTalk. That isn't investment protection like Companion provides.

Companion also provides total building coverage versus TransTalk's single-cell/single-user coverage. Companion's roaming capability ensures that a user can walk around a building without losing a call. Lucent is using the same technology you would use in your home for their so called "wireless" system. That just isn't what you would expect from a company who claims to be a technology leader.

Voice Mail/Applications Platform

When it comes to voice mail for Legend and Partner, Lucent also hasn't demonstrated their claimed leadership position. Partner voice mail has always been, and still is, more limited than any Norstar voice mail system.

Since Legend's inception, Lucent's voice mail solution for Legend has been a product called Merlin Mail for Legend. This product is old and has had little development, therefore Lucent has recently released a product called the Legend INTUITY AUDIX VS. Lucent calls the INTUITY AUDIX VS a multimedia messaging solution. The INTUITY AUDIX VS system includes voice messaging and automated attendant capability, plus optional fax messaging, call accounting, and networking.

INTUITY AUDIX VS is a more advanced messaging system than Merlin Mail, but it still doesn't handle as many ports as Norstar-PLUS Voice Mail. Norstar-PLUS Voice Mail can handle up to 16 ports while the INTUITY AUDIX VS only supports 12.

INTUITY AUDIX VS also doesn't support advanced applications like the following two.

Integrated Voice Response (IVR)

Interactive Voice Response (IVR) has been used for years in such applications as banking by phone. Now IVR is affordable for almost all applications so a business' customers can call and receive answers to their questions automatically, 24 hours a day.

The Norstar-PLUS Applications Module will soon have a software option for IVR. A software application generator toolkit will allow a business or software developer to create a custom IVR application for a unique business requirement. Nortel will also offer prepackaged IVR applications for specific vertical markets.

The IVR capability is not available on the INTUITY AUDIX VS. The only other option Lucent has for IVR in our market would be on the INTUITY 5, which is significantly more expensive ($30K for 4 ports) than INTUITY AUDIX VS.

Desktop Messaging

Norstar's Desktop Messaging is going to allow users to check all of their voice, email, and fax messages from a single screen on their desktop PC. Users will be able to instantly identify and prioritize their messages and respond to the most urgent messages first.

Norstar's Desktop Messaging option will run on the same Norstar-PLUS Applications Module that Norstar-PLUS Voice Mail runs on, thereby eliminating the need to purchase separate hardware for voice mail and desktop messaging (a Microsoft Exchange e-mail server will still be required).

Lucent doesn't have an affordable desktop messaging solution for Partner or Legend. The only Lucent system that currently has desktop messaging is the INTUITY 5, which now works directly with Microsoft Exchange e-mail servers. A basic 4 port/10 hour system without desktop messaging costs around $30K. However, Lucent claims to be coming out with some form of desktop control for message management for INTUITY AUDIX VS in June of 1997, but this will not include email management/ integration.

More Competitive Info

The following two pages highlight some of the reasons Norstar has more value than Partner and Legend. More detail is also available in the Norstar versus Partner and Legend Competitive Notes that are also a part of this sales guide.

Partner Deficiencies

Applications Server Platform

Partner doesn't support an applications server platform like the Norstar-PLUS Applications Module (NAM):

- The NAM will support ACD, Voice Mail, IVR, and Desktop Messaging
- An IVR application development tool will be available

Desktop Messaging and IVR

Partner doesn't have an affordable solution for IVR or Desktop Messaging

ISDN BRI

Norstar's ISDN BRI option will provide better data support:

- Partner doesn't support ISDN BRI
- Partner's analog to the desktop can't support data
- Partner can't have a data device that does Dynamic Bandwidth Allocation for Internet connectivity

Wireless Telephones

System Growth

Norstar grows to a larger system size than Partner:

- Partner: 48 stations/ Norstar: 192 stations
- No investment protection in moving to Legend

Softkeys

Partner telephones do not support softkeys:

- Norstar softkeys make the system easy to use and learn

Coordinated Dialing Plan

Partner doesn't have a Coordinated Dialing Plan:

- Partner can't network systems together with four digit dialing between them

Expanded Services Modes

Partner doesn't have Expanded Service Modes:

- Night service must be manually activated
- Night ringing can't be assigned to individual stations, only groups

Partner only supports cordless telephones in the 900Mhz spectrum:

- This frequency is not protected by the FCC, over 550 possible interference devices
- Handsets don't support roaming or handoff
- Norstar has Companion with roaming, handoff, and FCC protection

Computer Telephone Integration

Partner doesn't support TAPI:

- PassageWay is a proprietary CTI software that locks customers into Lucent applications
- Partner doesn't have an internal PC TAPI interface board for PCs with no Com port available.

Least Cost Routing

Partner doesn't have Least Cost Routing

Automatic Call Distribution

Partner doesn't support ACD

- Restricted dialing tied to Night Service

Call Log on Caller ID

Partner doesn't have a Call Log for Calling Line ID:

- Norstar's Call Log automatically logs all incoming calls

Unsupervised Conferencing

Partner doesn't support Unsupervised Conferencing:

- A conference initiator can't leave the call without disconnecting other callers

Reliability

Norstar has the highest reliability rate in the industry:

- Partner doesn't have a published MTBF, Norstar's is over 50 years

Power Consumption

Partner consumes far more power than Norstar:

- Partner costs up to $2700 more to operate over 5 years than Modular ICS

See document #9007 *Norstar vs. The Lucent Partner* for more detail about these and other deficiencies.

Legend Deficiencies

Applications Server Platform

Legend doesn't support an applications server platform like the Norstar-PLUS Applications Module (NAM):

- The NAM will support ACD, Voice Mail, IVR, and Desktop Messaging
- An IVR application development tool will be available

Desktop Messaging and IVR

Legend doesn't have an affordable solution for IVR or Desktop Messaging

- INTUITY Audix VS doesn't have either of these capabilities
- INTUITY 5 is priced at around $30K for 4 ports

ISDN BRI

Norstar's ISDN BRI option will provide better data support:

- Legend doesn't support Dynamic Bandwidth Allocation for Internet connectivity
- Legend's data device doesn't support D-channel packet switching
- Legend's data device doesn't support TAPI or include a TAPI application

Wireless Telephones

Legend only supports cordless telephones in the 900Mhz spectrum:

- This frequency is not protected by the FCC, over 550 possible interference devices
- Handsets don't support roaming or handoff
- Norstar has Companion with roaming, handoff, and FCC protection

Computer Telephone Integration

Legend doesn't support TAPI:

- PassageWay is a proprietary CTI software that locks customers into Lucent applications
- Legend doesn't have an internal PC TAPI interface board for PCs with no com port available.

Blocking Technology

Legend's architecture can block calls:

- Only 216 time slots compared to 640 on Norstar
- Simultaneous voice/data calls on multiple sets quickly uses up slots

Coordinated Dialing Plan

Legend doesn't have a Coordinated Dialing Plan:

- Legend can't network systems together with four digit dialing between them

Expanded Services Modes

Legend doesn't have Expanded Service Modes:

- Automatic Route Selection can't be turned on automatically at different times of day
- Night service only has one timer per day, all phones must enter at same time
- Restricted dialing tied to Night Service

Call Log on Caller ID

Legend doesn't have a Call Log for Calling Line ID:

- Norstar's Call Log automatically logs all incoming calls

Unsupervised Conferencing

Legend doesn't support Unsupervised Conferencing:

- A conference initiator can't leave the call without disconnecting other callers

Reliability

Norstar has the highest reliability rate in the industry:

- Legend's MTBF is only 2.1 years compared to over 50 years for Norstar

See document #9099 *How to Beat Merlin Legend* for more detail about these and other deficiencies

Nortel CALA Inc.
1500 Concord Terrace
Sunrise, Florida 33323
Telephone: (305) 851-8000
Fax: (954) 851-8818
Attn: Marketing Communication

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This is a new subscription ☐ This is an address/title change ☐

Please specify product:

☐ Companion ☐ Magellan ☐ Meridian 1 ☐ Norstar

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To ensure that you continue to receive Nortel Bulletins in the coming months, please examine your mailing label and make any necessary corrections on this business reply form.

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Please Note Fax Number Change

Send this form via fax to the following number (954) 851-8818, attention: Claudia Joannou, Documentation Manager.

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Por favor especifique el producto:

☐ Companion ☐ Magellan ☐ Meridian 1 ☐ Norstar

☐ Por favor marque aquí si Ud. es nuestro cliente para Magellan

☐ Telsets

Conmutación:
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Si su información está correcta, puede utilizar este formulario para añadir el nombre de algún colega que quiera recibir futuros boletines.

Por Favor, Tome Nota del Cambio de Número de Fax

Envíe este formulario al fax (954)851-8818, atención, Claudia Joannou, en el Dept. de Comunicaciones.

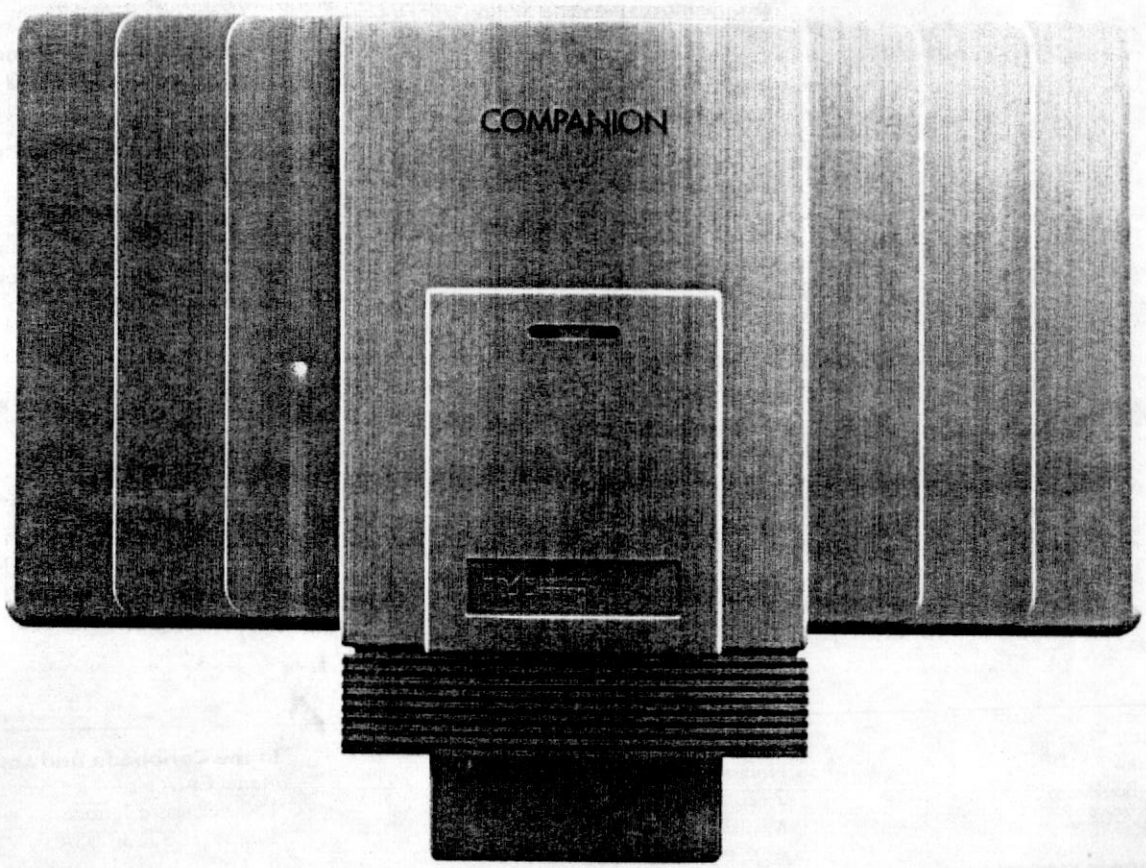
COMPANION Base Station

COMPANION Base Stations provide the radio link for the COMPANION Wireless Communications System for Business.

The Base Stations are mounted on walls or ceilings throughout a building. They send and receive calls between the portable telephones and the Controller.

As you talk, your conversation is picked up by a Base Station and as you move, it hands the call to another Base Station in the system. This ensures the highest quality audio for your conversation while you move.

Installation is simple as the Base Stations require ordinary telephone wiring to connect with the Controller.



COMPANION
Base Station

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Each COMPANION Base Station supports two simultaneous calls and depending on traffic requirements, one to four Base Stations can be grouped together to form a cell.

The digital voice quality of the COMPANION system is enhanced by antenna diversity. This means that, as people move, the Base Station samples the reception on its antennae and continually switches to the one with the best reception.

By adding optional external antennae, coverage can be extended outside a building.

As the number of users or coverage area increases, more Base Stations can be added. This means growth is modular and cost effective.

The advanced digital radio means superior voice quality with no interference or eavesdropping.

Design Summary

Cell Radius
- In a building: 65-230 ft. depending on building construction
- Open environment: up to 650 ft.

Distance from Controller
- 3900 ft. with twisted pair 24AWG wiring

Base Station Traffic Capacity
- 2 simultaneous calls (2 channels)

Cell Traffic Capacity
- 2-8 channels or 1-4 Base Stations

Antenna
- Internal: dual antennae for each radio (antenna diversity)
- External: optional for outdoor coverage or directional coverage indoors

Installation
- Mounted on ceiling or wall with supplied bracket

Power
- Remote power through twisted pair 48V DC
- Local power plug-in 110V AC transformer

Operation
- Type approved, radio licence not required

Weight
- 1.8 lbs

Dimensions
- 8 x 12 x 2 in.

Color
- Dolphin gray

Operating Temperature
- 32°F to 104°F

Storage Temperature
- -13°F to 158°F

Radio Protocol
- Personal Communication Interface (PCI)
- 1.92 GHz-1.93 GHz
- Dedicated frequency for unlicenced PCS
- 99 voice channels
- Frequency Division Multiple Access (FDMA)/Time Division Duplex (TDD)
- 100 kHz channel spacing
- 32 kbits/sec Adaptive Differential Pulse Code Modulation (ADPCM) speech coding
- Dynamic Channel Selection
- Radio Frequency (RF) Output Power – 32 mW Effective Radiated Power (ERP) maximum

In the U.S.A.:
Northern Telecom
2221 Lakeside Boulevard
Richardson, TX 75082

Telephone: **1-800-4 NORTEL (466-7835)**

Ordering Number: P0809840 Issue 02
April 1996

In Canada:
Northern Telecom
2920 Matheson Boulevard East
Mississauga, Ontario L4W 4M7

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1500 Concord Terrace
Sunrise, FL 33233 USA

Telephone:
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Mexico (525) 325-2100
Brazil (55) (11) 841-8677

Internet: http://www.nortel.com

Printed in Canada on recycled paper

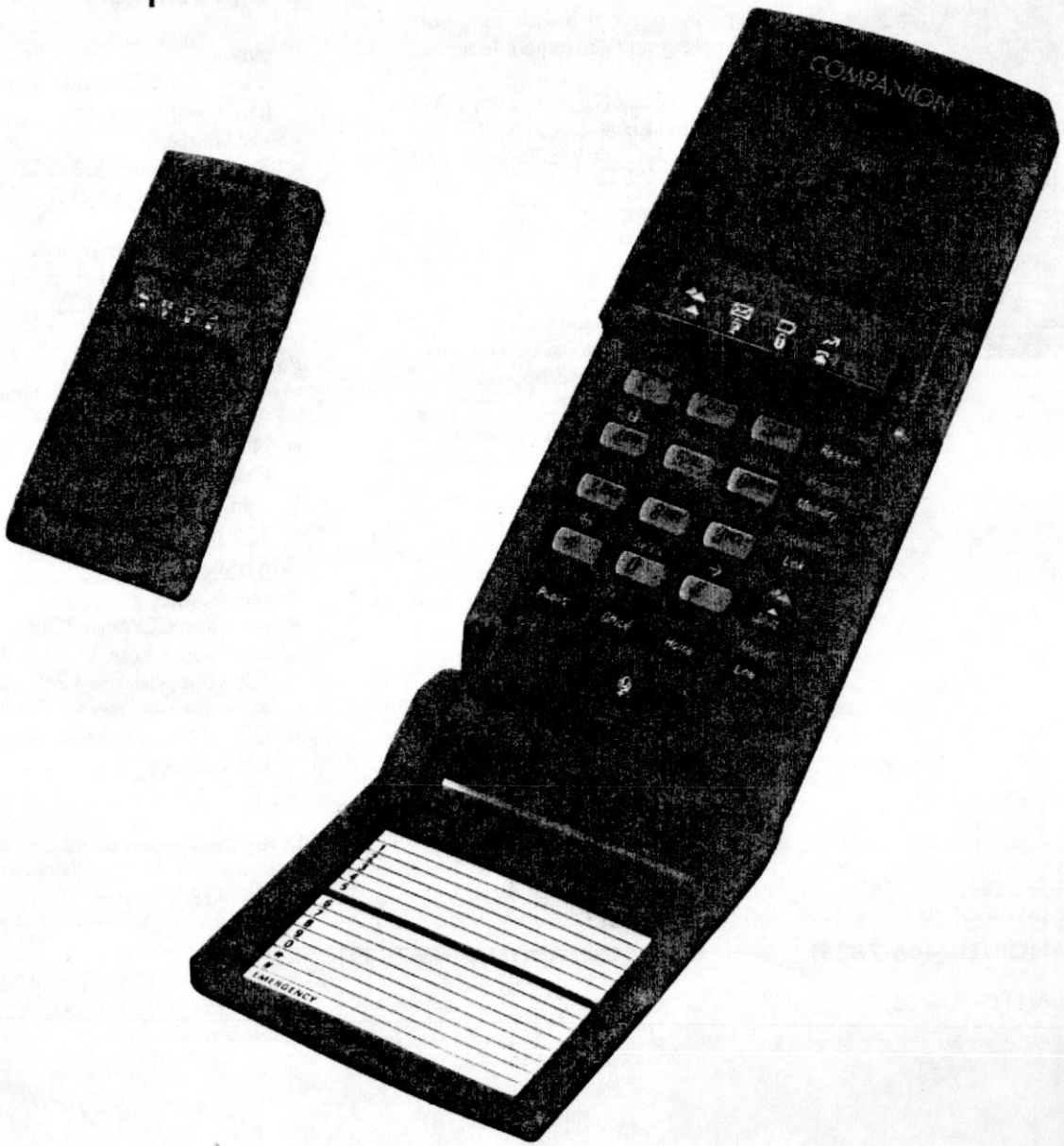
COMPANION C3020 Portable Telephone

The COMPANION C3020 is a compact, portable telephone that can be opened with the push of one button.

When used with the COMPANION Wireless Business Communications System in a building, it enables people to make and receive calls anywhere on the premises.

Function keys provide quick access to features and the large two-line alphanumeric display shows the name and the number of the person or company calling when system is working with Meridian COMPANION or the C200 behind Centrex is used.

The C3020 Portable Telephone can have its own number. Or, it can share the same telephone number with a desk telephone, so that when a call comes in, both phones will ring. People can start a conversation on one phone and easily switch to the other.



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COMPANION C3020
Portable Telephone

The COMPANION C3020 Portable Telephone supports a wide range of time-saving and convenient features such as:

- Calling Party Name Display (CPND)
- Call Line Identification (CLID)
- Visual Message Waiting Indicator (VMWI)
- Call Transfer
- Call forward
- Conferencing

Digital performance means the C3020 provides superior voice quality, with no interference or eavesdropping.

To deter unauthorized use, people can lock their portable telephones with their own password.

Low Power consumption means the C3020 has long battery life and will easily make it through a normal working day before requiring recharging.

Design Summary

Display
- 2 line Liquid Crystal Display (LCD) with status icons

Power Source
- 3 AAA batteries (alkaline or rechargeable nickel cadmium)
- Optional recharger with rechargeable nickel cadmium battery pack (1-2 hour charging time)

Power Consumption
- Alkaline: 13 hours talk time, 200 hours standby time
- Nickel cadmium: 4 hours talk time, 60 hours standby time

Weight
- 170 grams

CLID/CPND/VMWI Prerequisites:
- Meridian COMPANION with Meridian 1 Release 20 Software
- Software package #240, package #95 also required for CPND
- C200 behind Centrex with CMS service

Dimensions
- 14.5 x 6.3 x 2.2 cm

Color
- Black

Operating Temperature
- 0°C to 40°C

Radio Protocol
- CT2Plus Class 2 Standard
- 944 MHz-948.5 MHz (944 MHz-952 MHz capable) Dedicated frequency for Personal Communications
- 40 voice channels (72 voice channel capable)
- Time Division Duplex (TDD)
- 100 kHz channel spacing
- 32 kbits/sec Adaptive Differential Pulse Code Modulation (ADPCM) speech coding
- Dynamic Channel Selection
- Radio Frequency (RF) Output Power – 10 mW Effective Radiated Power (ERP) maximum

In Canada:
Northern Telecom
2920 Matheson Boulevard East
Mississauga, Ontario L4W 4M7

Telephone: **1-800-4NORTEL (466-7835)**

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Ordering Number: P0741155 Issue 05
April 1995

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Product Bulletin

Number: CALA-104-PB
Date: June 1998

Technical Services

Norstar ITAS Web site

Your Norstar ITAS team is pleased to announce our on-line Web site for the most current listing of Norstar Technical Tips, Bulletins, Training, Software Enhancements and Links to other relevant sites.

WWWITAS !! We currently have a World Wide Web site set up for the latest technical information.
With this Home Page we intend to:

- Improve customer communications to our authorized Norstar channels
- Make product and technical training information more accessible
- Enhance distributor support operating efficiencies
- Automate notification of important changes while conserving our natural resources

Future initiatives planned that will add additional value are:

- Technical Training Equlvance Exam On-Line
- More Documentation
- On-Line CSR viewing/entry
- Technical Chat Room

Security

In order to maintain security; WEB site areas containing proprietary information will be password protected. Each individual user desiring access will need an account code to register a password. The account codes will be

provided at a cost of only $5 per order item through the standard order process. If necessary, Authorized Distributor personnel (owners, management, PLM) can request deactivation of an account by calling ITAS at 1-800-321-2649.

Requirements for Access

- Users should have access to an Internet Service provider such as America on Line or similar service offering.
- Users should have an external EMAIL address, which will be used to facilitate automatic notification of site additions.
- Although a variety of web browsers will work with the ITAS site, development and verification testing has been done using Netscape 2.0 and later.
- A users access platform (PC attributes) and modem speed will play an important part in performance. For the most part minimum hardware levels will be determined by your applications software or browser packages.
- For users who have access via their company's internal network, proxy definitions may prevent access to the ITAS or other external sites. If you encounter proxy errors, contact your local internal information services support personnel.

Access Process

Authorized Distributors will process a P.O. through the normal inside sales order entry procedures. The part number is WWWITAS. Multiple parts may be processed on a single order.
After successful order entry, an information packet containing the URL and individual account code will be shipped to the specified location.
At first access using the individual account code, the user will be required to complete an electronic registration form. This form will be used to record personal password preferences, ID information and external EMAIL address (Very Important).
After registration, you're off and running, Enjoy!

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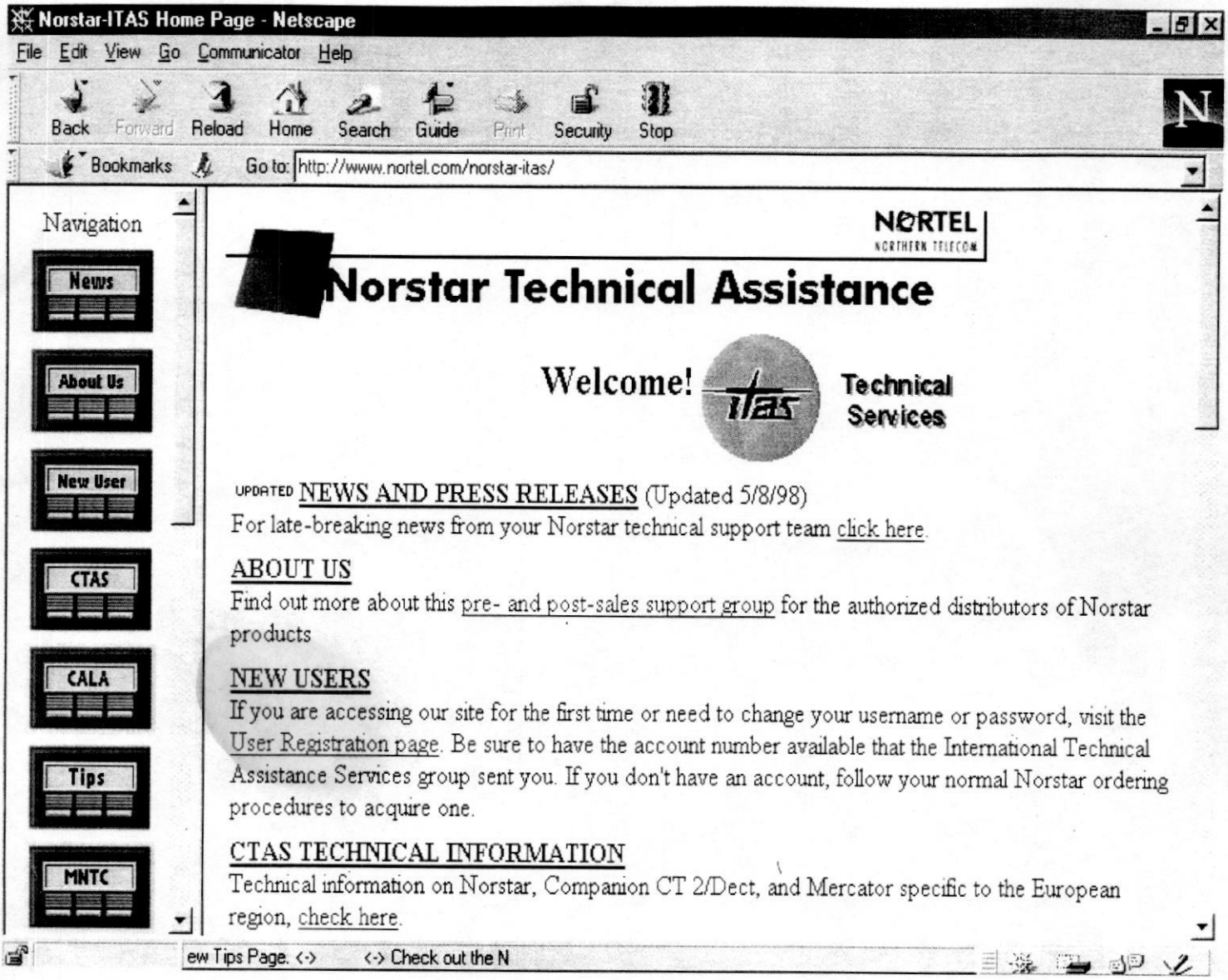
Page Example



Your comments and suggestions for improvement would be greatly appreciated!

For site *comments* you can contact:
Ricky Stevens
Manager, Norstar ITAS
Customer Communications
Phone: 1-800-321-2649
Fax: 615-734-5177
E-mail: rstevens@nortel.com

For questions or assistance contact
Carlos Fidalgo
Norstar Marketing, Nortel CALA
Tel. (954) 851-8064
Fax (954) 851-8300

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